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Oscillating Engine.

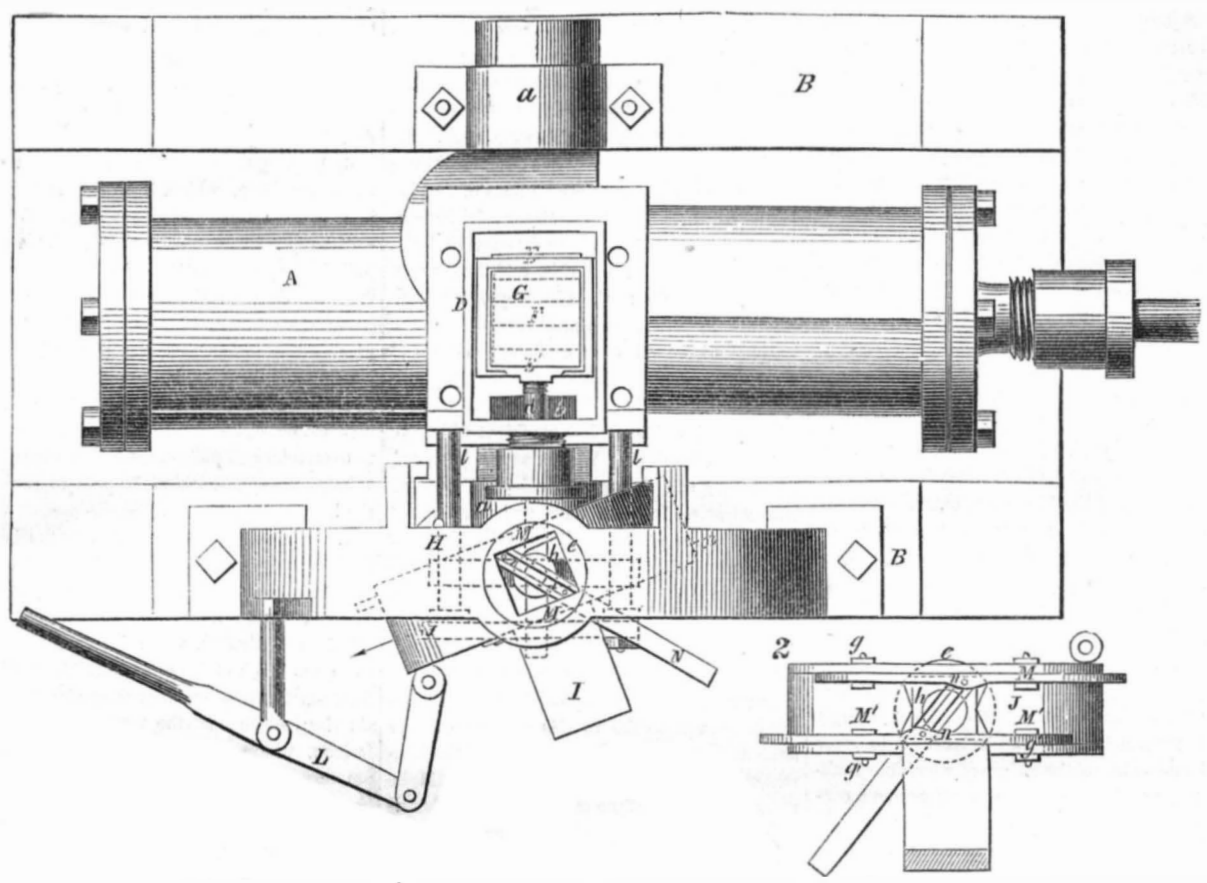
The annexed engravings are views of an improved valve motion of oscillating engines, for which a patent was granted to William Stephens, of Pittston, Pa., on the 11th of last month (October).

Fig. 1 is a plan view of an oscillating steam engine, having the improvement, with the cover of the valve box removed. Fig. 2 is an inverted horizontal section view of the movable way frame. Figure 3 is a side elevation of a part of the engine and the valve motion. Fig. 4 is a side view of the cross head of the valve rod. The same letters refer to like parts.

This invention produces the necessary movements of the slide valve by means of a fixed groove or guide attached to some part of the engine frame in a convenient position to receive a stud connected to the valve rod; the said stud receives a proper motion by being carried along the groove mentioned, by the oscillation of the cylinder. The improvement will be fully understood, in construction and operation, by the following description:—

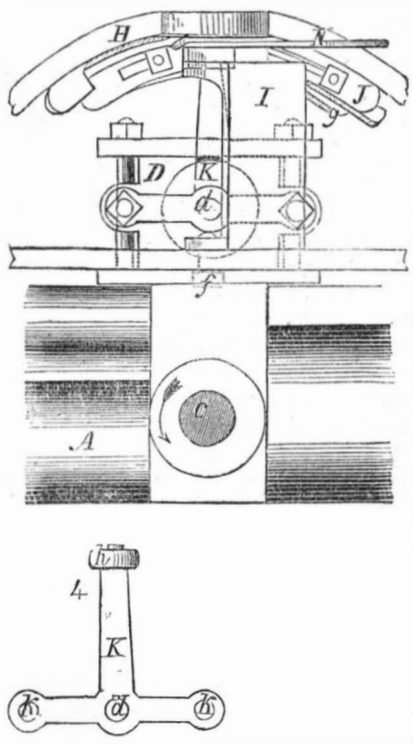
A is the cylinder of the engine; *a a* are its bearings; B B are its standards. D is the valve box on the top of the cylinder receiving steam through the opening, *b*, which communicates through the trunnion, *c*, with the steam pipe. E E′ F are the steam and exhaust ports, which (in the position of the engine shown in figs. 1 and 2,) are covered (except a small portion of fig. 1) by the short slide valve, G, which is of the common construction, and has its rod, *d*, passing through a stuffing box on one side of the valve box. H is a frame of a segmental form, secured to the standard, B, on that side of the engine where the valve rod passes through the box; this frame has a hole bored in its upper circular part, to receive a hollow journal, *e*, at the top of the way frame, I, which is an adjustable frame containing the groove or guide, which produces and directs the movement of the valve. The lower part of the frame receives a screw stud, *f*, which forms a pivot for the lower part of the way frame,—the journal, *e*, and pivot, *f*, thus forming an axis which is radial to the axis of oscillation—that of the cylinder. Part of the way frame forms an arc, J, described from the axis of the cylinder's oscillation. This arc has a groove formed by strips, *g g′*, projecting on its underside, for the purpose of receiving a friction roller, *h*, which turns freely on a pivot on the cross head (K, fig. 4) secured to the valve rod. The two eyes, *k k*, are fitted to two guide rods, *l l*, which are so secured to the valve box, as to preserve the rectilinear motion of the rod. The way frame, I, is under the control of lever L, having its fulcrum fixed in the engine frame, and can be adjusted on its axis, *f*, so as to bring the arc, J, at an inclination to the axis of the cylinder's oscillation, either in the direction shown in fig. 1, or in the opposite direction, or at right angles to the axis, when it would occupy the position figure 2, relatively to figure 1. When the arc is in the latter position the engine is stopped, as the oscillation of the cylinder gives no motion to the slide valve, which would be in position to close both steam ports; but when

VALVE MOTION OF OSCILLATING ENGINES.---Fig. 1.



in either of the positions shown and indicated in figure 1, the groove between the strips, *g g′* is similar to the recess in the thread of a screw, and as the cylinder oscillates, it gives motion to the valve; the two positions serve to actuate the valve for running the engine in both directions. The position of the arc, for giving the proper motion, is regulated by stops on the frame, H; the arc is is moved when in contact with one of these. M M′ are the adjustable lining pieces of the guides in the arc, J; these consist of metal strips attached to the strips, *g g′*, by bolts passing through slots, which allow them to be adjusted longitudinally. The strips are straight, except that each has a rounded rise, *n*, on its face at about the center of its length; the two being connected by a lever, N, which works through a slot in the top of the way

FIG. 3.



frame, and allows the two rising parts, *n*, to be brought on either side of the center point of the movement of the roller, *h*, one being always on the opposite side of the said center to the other, as in figs. 1 and 2. The cylinder is supposed to be oscillating in the direction of the arrow, fig. 3, the piston having just arrived at the right-hand end, and being about to commence its motion towards the left,—the valve having a "lead" and the steam port, E, leading to the right hand end of the cylinder being open. The "lead" of the valves is caused by the rise, *n*, on the lining piece, M, against which the roller works during the oscillation in this direction; by the roller arriving at the foot of the rise just before the engine is on the center, an increased speed is suddenly given to the valve at that point, so that it is slightly open before the termination of the stroke, and before it arrives at the center of travel in the guide. In oscillating in the other direction, the roller works against the other lining piece, M′, and the valve receives a "lead" on the opposite side in a similar manner. The ascent and descent of each rise, *n*, are of the same form, and thus they will serve to give the "lead" in whatever direction the engine revolves, but when the position of the frame is changed, to reverse the engine, the position of the lining pieces also requires to be changed to bring the rising parts, *n*, of each on a different side of the center of motion; this change of position is effected by moving the lever, N.

The ports and valve are so arranged that the latter works transversely on one side of the cylinder, as near as possible to its axis of oscillation, while the groove or guide is arranged in such a manner as to form a portion of a helix or screw which is concentric to the said axis, and includes the valve rod; and in furnishing the said valve rod with an arm or stud which enters the groove or guide, it thus transmits motion to the valve, as the cylinder oscillates. By this arrangement the motion is transmitted directly to the valve without the necessity of a way shaft, or intermediate mechanism. By lining the sides of the groove with adjustable sliding pieces of a certain form, the valve "lead" is given in whichever direction the engine is working.

For further information address the patentee as above.

Important to Inventors.

In consequence of the cramped condition of the Patent Office, the Commissioner has, of necessity, become very arbitrary in regard to the size of models. We publish the following information taken from the official circular, and take this occasion to caution applicants for patents, not to exceed the size laid down by the Office, if they wish to save themselves the necessity of furnishing a new model. We are constantly obliged to instruct our applicants of the rejection of their models in consequence of their being too large.

"The model should be of durable materials, and be firmly constructed, so as to bear the frequent handling to which it is necessarily exposed. If of any soft wood it should be painted, stained, or varnished. Its external dimensions should not, if practicable, exceed one cubic foot in measure. The name of the inventor, and that of the assignee, if the patent issue to him, should be permanently affixed to it, either by engraving or otherwise.

"When models or specimens come unaccompanied with a name, so much difficulty has been felt in assigning them to their proper destination, that the Office cannot answer for them if they are mislaid or even lost."

Excellent Dentrifice.

Dissolve two ounces of borax in three pints of boiling water, and before it is cold add one tea spoonful of the tincture of myrrh and one table spoonful of the spirits of camphor and bottle for use. A table spoonful of this mixture mixed with an equal quantity of tepid water, and applied daily with a soft brush, preserves and beautifies the teeth; it extirpates all tartarous adhesion, arrests decay, induces a healthy action of the gums, and makes them look pearly white. The best period to wash the teeth is before retiring to sleep.

Washing the face, hands and feet before retiring to sleep conduces to health and longevity.

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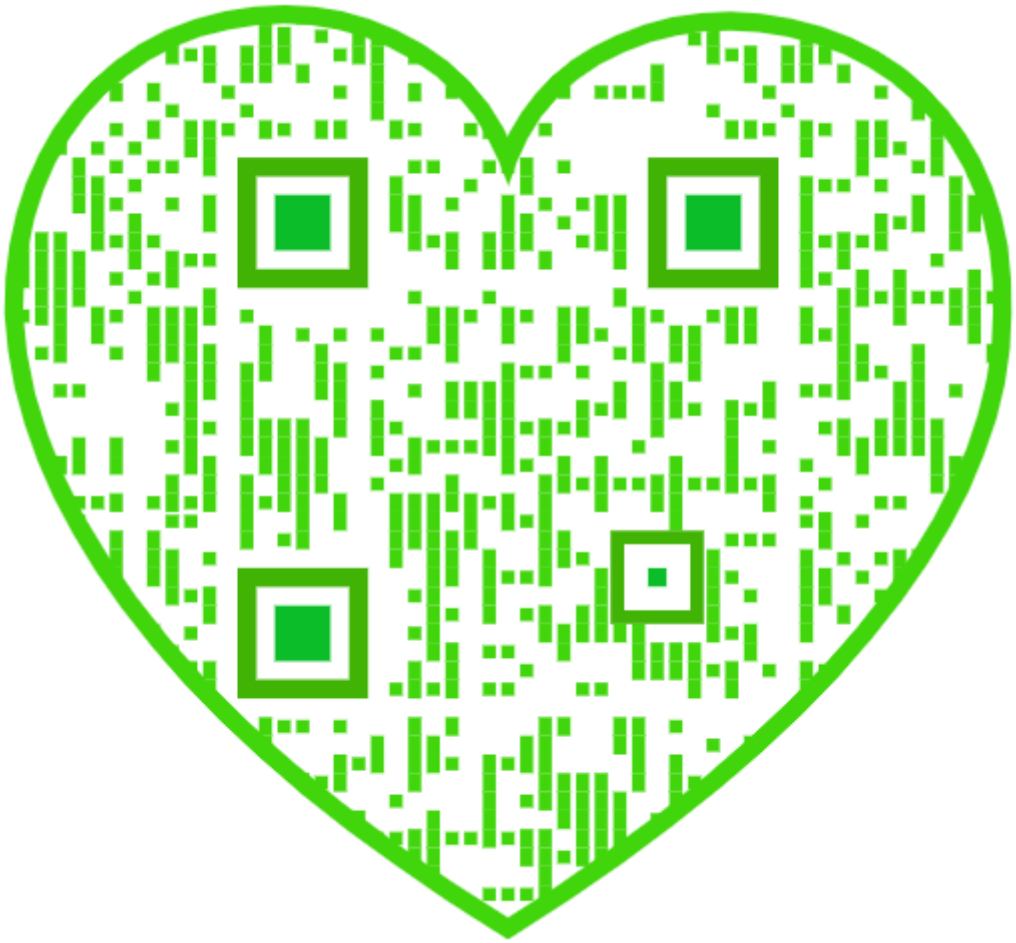

Heat of the Sun---Will it Ever Decay.

The following is an extract from the address of President Hopkins, before the British Scientific Association:—

"The sun cannot continue for an indefinite time to emit the same quantity of heat as at present, unless his thermal energy be renovated from some extraneous source. The same conclusions may be applied to all other bodies in the universe, which, like our sun, may be centers of intense heat; and hence, recognizing no adequate internal supplies of heat, to renovate those existing centers of heat, Professor Thomson concludes that the dispersion of heat, and consequently of physical energy from the sun and stars into surrounding space, without any recognizable means of re-concentration, is the existing order of nature. In such case the heat of the sun must ultimately be diminished, and the physical condition of the earth therefore altered, in a degree altogether inconsistent with the theory of non-progression. I would at present merely state that my own convictions entirely coincide with those of Professor Thomson. If we are to found our theories upon our knowledge, and not upon our ignorance of physical causes and phenomena, I can only recognize in the existing state of things a passing phase in the material universe. It may be calculated in all, and is demonstrably so in some respects, to endure under the action of known causes for an inconceivable period of time, but it has not, I think, received the impress of eternal duration, in characters which man is able to decipher.—The external temperatures and physical conditions of our own globe may not, and probably cannot have changed in any considerable degree since the first introduction of organic beings on its surface, but I can still only recognize in its physical state during the intervening period, a state of actual, though exceedingly slow progression, from an antecedent to some ultimate state, on the nature of which our limited powers will not enable us to offer even a conjecture founded on physical research."

[The above opinions of such eminent philophers are the only legitimate conclusions of a belief in the nebular hypothesis. Without fully discussing the question at present, "that heat is a subtle matter" in motion, or at rest, we will present a few arguments to show that the above savans have overlooked certain aws of the physical universe in arriving at the conclusions set forth.

What do we know of heat as a substance? Has any man seen it with his eyes, handled it with his hands (like a stone) or weighed it in a balance? No. We have no positive proofs then that it exists as matter at all, and know nothing about it as such; but as a *quality* belonging to all matter, and developed under certain conditions, we know a great deal. On this point, our information is positive, and in applying this positive information to the explanation of solar heat, we cannot but conclude that we have no evidence to warrant a different conclusion than that "the sun's heat is the same in quality and quantity to-day as it was two thousand years ago, and that it will be the same two thousand years hence."

The most unlettered man knows that heat is a quality of all matter developed under certain conditions; the very savage who obtains fire by rubbing two pieces of dry wood together knows this. Heat is a property with which the Great Creator has endowed all matter, the same as he has endowed all matter with the quality of *gravity*, and both matter and mind, with other qualities. It is only developed under certain conditions, just as gravity is developed. We never could know anything of the laws of gravity if there existed but one molecule of matter in the universe, but take two such molecules and place them in certain relations to one another (these are the conditions) and gravity is developed. It is the same with solar heat. The sun and our planet must first be deprived of certain qualities, or their relations must be changed, before the quantity of solar heat experienced by us on earth be diminished.

And if the quality of heat in our great luminary is developed by certain motions in itself, by the property of *inertia* which belongs to all matter, the sun must first be deprived of this quality before the action —impetuses—by which its heat is developed be diminished. Thus reasoning, we believe we have completely established our *premises*, and have shown that "the *thermal energy* of the sun does *not* require to be renovated from some *external source*," as stated in the above extract, to produce the same quantity of heat forever. Until the philosophers who have adopted the above theory, show how matter can be deprived of the quality of heat, and until they show how the law of inertia is to be suspended, we can entertain no other opinions than those we have expressed.

The Pacific Railroad - Wall Street Intrigue.

There is good reason for supposing that the Wall Street Pacific Railroad Company have already employed a heavy force of lobby members to besiege Congress this winter, until the Members will consent to relieve Secretary Guthrie of the care of the thirty millions of surplus now in the Treasury for their especial benefit. Now we want it distinctly understood that the public press are aware of this, and that it cannot be bought up to the advocacy of any such scheme. None but those most regardless of the public interest will ever consent to be silent when the evidence of this shall be fully presented. The scheme is sufficiently odious without this feature, which we feel confident will serve to kill it thrice dead. We are aware, however, that money will do a great deal—will work almost miracles, in these days, and Wall street could afford to pay *two millions* to the Members of Congress, if they were to be bought, to ensure the success of this measure; this divided among two hundred members—enough to carry the scheme triumphantly,—would amount to the handsome sum of $10,000 apiece—a pretty strong temptation to many of them. We hope the press will awake to this matter,—we are anxious to see this railroad built, but the interest of the public demands that it should be under the control of no monopoly, and it is certain that any public man, embarking in the support of this plan for robbing the Treasury to ruin the public, will be a marked man—it will be an act of political suicide. We have no private interests to subserve in this matter, and we shall enter readily into the support of any measure which, in our judgment is likely to promote the public welfare, whether it may have been proposed by ourselves or others, but this Wall street scheme we shall steadily oppose.

Practice of Shoeing Horses.

Charles Percival, veterinary surgeon of the Royal Artillery, furnishes the following communication to one of the Dublin papers:—

I have lately been devoting much attention to shoeing, and flatter myself that the horses under my care are well shod.

The shoe I found in use here was made concave next to the foot, and flat on the ground surface, than which in my opinion, nothing could be worse. This shoe I have had reversed, making the latter as concave as the foot will possibly admit of, leaving only sufficient room between the shoe and the foot for the pricker to pass freely round, to remove dirt, &c. To the heels of the shoe I have given an inclined plane outwards on the foot surface, with three nails on the inside and four on the outside. The heels, instead of being cut off straight, are well sloped, and about the same thickness as the toe. The shoe one-third as thick at the heel as the toe, recommended by the late professor, the majority of horses could not travel in. There are many pernicious practices which smiths in general, if left to themselves, fall into, viz.:

1. Mutilating the frogs by improper cutting: I have at length got my farriers to understand that the only part of the frog which requires cutting, unless ragged, is the point, to prevent the sensible frog being bruised between it and the coffin bone.

2. Inflicting serious injury to the crust by an improper use of the rasp, but especially the coarse side of it.

3. In fitting the shoes, by cutting too much out of the crust at the toe to admit the clip. The shoe is consequently set too far back, instead of being fitted full to the crust, and afterwards rasping away the crust, making the foot, in fact, to fit the shoe, instead of the shoe to fit the foot. This is a faulty practice, and very seriously so, which smiths in general are very apt to fall into; one, too, which renders the crust shelly, for that part into which the nails are driven from time to time is in this way rendered weak.

4. In turning shoes, smiths in general do not attend sufficiently to bevelling or sloping the edge of the shoe from the foot to the ground surface, which I consider of great importance, especially if horses are given to cut or interfere in their action.

5. Cutting the heels of the shoe off straight. This is also a very bad practice: if well sloped, like a shoe for hunting, to which there cannot be any objection, they are less liable to be pulled off by the hind shoe catching in them, and contribute more to safety of both horse and rider.

6. Leaving the inner edges of the hind shoes at the toe sharp, which, if well rounded, will, in a great measure, prevent over-reaches, as well as render the fore-shoes less liable to be pulled off by their catching in the heels of the former. Squaring the toe of the hind shoe for horses that forge, or "carry the hammer and pincers," as it is termed, leaving the horn projecting over the shoe, is, in my opinion, good as a general rule, not only preventing that unpleasant noise, but rendering horses less liable to overreach and pull off their fore shoes, provided, however, attention be paid to rounding the inner edges.

7. In rasping the under part of the clinches, farriers are very apt to apply the edge of the rasp improperly to the crust, forming a deep groove around the same, which cannot but be injurious to the foot, and together with taking away too much of the crust in finishing off the foot, must have a tendancy to render it shelly. Curving the shoe at the toe, after the French fashion, where horses go near the ground, I am very fond of, but I cannot see any advantage in it as a general practice.

Railway Difficulty Settled.

The disputed crossing of the Northern Indiana and Chicago Railroad, and the Illinois Central Railroad has been at length determined by a decree of the Commissioner appointed by the Circuit Court of Cook County, Illinois. They direct that the Illinois Central Road shall cross the other by means of a bridge eighteen feet in the clear above the surface of the rails of the Northern Indiana Road, thirty feet wide in the clear, to be efficiently commenced within thirty days from the date of the decree, November 5th, and to be prosecuted with all due diligence to a final completion.

This is the place where the fearful accident took place this spring, by which 30 persons lost their lives.

The Panama Railroad.

The work on the Panama Railroad is being pushed forward with the utmost rapidity; three of the spans of the bridge over the Chagres at Barbacoas are finished, and the last is in an advanced stage toward completion. It is the intention of the Company to have the cars running regularly to Obispo, two miles from Cruces and eighteen miles from Panama, by the 1st of December next, thus reducing the time of crossing the Isthmus to one day, and doing away entirely with the river navigation. They also intend to commence work on the Panama end of the route on the 1st of January, 1854, and for that purpose are bringing 4,000 Coolies from India. All on the Isthmus confidently expect the road to be finished and in running order by the first of Januory, 1855.

Two trains met on the 12 inst. upon the temporary bridge at 109th st., this city, on the Harlem Railroad. No person was hurt; the bridge is 60 feet high. It is surprising that no person was killed.

Spirits of turpentine is prescribed as an effectual circumventer, of cockroaches. Only touch the sides of book-cases, bureaus, &c., with it, and the enemy quits not only the furniture but the room.—[Ex.

[The above may be a good receipt; it is easily tried.

Petroleum Spring.

A new petroleum, or oil spring, has been discovered in Western Virginia, near the forks of the Hughes River. It was found in sinking a well for salt. Instead of salt, however, the spring commenced blowing out mineral oil, and has so continued to furnish it at intervals up to the present date—about fourteen gallons of oil being produced every fifth day. An account which appears in the "Christian Advocate and Journal," says, that the stratum yielding the oil lies parallel with the bed of the river, is generally near five feet thick, and is reached in various places by sinking pits thirty feet into the earth. Some pits fifteen feet square, have yielded one hundred and thirty five barrels of oil, but all are not alike rich.

Hydrate of Magnesia as an Antidote.

From the results of the experiments of Schuchardt, it would seem that the hydrate of magnesia is not only an antidote for arsenious acid in solution or substance, which has been long known, but also for corrosive sublimate, the salts of copper, and even, though the experiments are not decisive upon this point, for certain alkaloids, such as morphia, brucia, &c.—The hydrate of magnesia is prepared extemporaneously by mixing water with calcined magnesia. In poisoning by arsenical preparations, the quantity of magnesia used as an antidote should be twenty times as great as the poison ingested. If the toxic effects of corrosive sublimate are to be neutralized, a quantity of the antidote five times as large as that of the poison will be sufficient.—[Revue Medicale.

American Wool.

Peter A. Browne, Esq., of Philadelphia, in a recent communication to the "Richmond, (Va.) Whig," asserts that he can show that "as fine fleece can be procured in the United States as in any portion of the world." He says that he has in his possession wool grown in Allegheny Co., Pa., by Wm. Hall, which measures from 1-2186 to 1-2500 part of an inch, while the finest wool in the collection sent to him by the King of Prussia, and the finest sent to him by the King of Saxony, measures 1-2185. Mr. Browne denies the correctness of the decision on the subject at the London Crystal Palace Exhibition, and produces facts to show that the jury on wool did injustice to the specimens of American wool exhibited.

Ink---Notice.

A correspondent asks how he is to boil his logwood according to the receipt for ink on page 50? That receipt says, "add enough water during evaporation to have one gallon of *liquor* at the end of the boiling. This is so plain that he who reads *might* understand. It may be boiled in ten gallons of water, only let it be boiled down to one at the end of the time mentioned, and surely, if never reduced to less than one gallon, the 20 lbs. could never be boiled without being in *a* gallon of liquor.

Mr. Steers, the builder of the yacht America, has constructed a model of a ship of 2,500 tons, for the California and New York trade, of which he is to be the owner himself, in part or exclusively, and which he undertakes will sail twenty two miles an hour, beating any steamer that has ever yet floated. He will sail her, when finished, against any ship in the world for $10,000.

Hollow axles are being extensively adopted on the London and Northwestern Railway. It is found that they have double the strength of a solid axle, of the same weight of metal, and of course are more economical.

The "National Intelligencer," a few weeks since, in a long article, proved conclusively that Capt. McClure could not have made the passage round the north of our continent.

What has become of the remains of the Comet, which according to Prof. Jewett, was to strike against our planet about two months ago. China was to be the striking point, but not a china cup or saucer has been broken, we believe, by the concussion.

The Erie Railroad with its equipments cost twenty-five millions of dollars, and employs two hundred locomotives.

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[Reported Officially for the Scientific American.]

LIST OF PATENT CLAIMS

Issued from the United States Patent Office

FOR THE WEEK ENDING NOVEMBER 8, 1853.

CUTTING GEAR OF GRAIN AND GRASS HARVESTERS—By S. S. Allen, of Salem, N. J.: I claim the arrangement by which the driving wheel is made the center of oscillation in counterbalancing the cutter beam and cutters thereon, embracing the secondary wheel and spring, for the purposes set forth.

I also claim the combination of the tongue, with the driving wheel and secondary wheel, for the purpose set forth.

I also claim the method of balancing the cutter blades on the angular bar, by the sliding bar, in combination with the blade, or their equivalents, for the purpose set forth.

Lastly, I claim the construction of the cutter blades as formed on the under side with a rasp or roughened surface, while the upper side forms a shear cutting edge for the purpose of preventing choking of the fingers and supplying an oil box to the cutter bar, as set forth.

CARRIERS TO GRAIN SEPARATORS—By John Blue, of Covert, N. Y.: I claim the arrangement of the cam blocks, or their equivalents, on the shaft, for agitating the endless apron, as set forth.

VIOLINS, &c.—By Cornelius S. Cooper, of New York City: I claim the application of the spring bass beam or bar, in place of the solid beam, which is taken from the violin for the violin tenore or Viola Violoncello, double bass, or Violono, or any other instrument requiring a bass beam or bar for the production of tone, then the support of the ends of said spring or improved bassbar, by cutting of notches or mortises in said end blocks, as shown, and supporting said ends in any manner, by connecting them or the bearings of said spring to said end blocks to produce the desired effect; also the separation of the bass bar or beam from the top or sound board, except the three inches, as shown, using any wood which will produce the desired effect.

TURNING OR CUTTING IRREGULAR FORMS—By Nathaniel Gear, of Zanesville, Ohio: I claim the combination of knives, as described, with a rotary cutter head, so that said head shall serve as a guide or directrix to the form or pattern carrying the material to be dressed.

POWER LOOMS—By James Greenhalgh, Jr., of Waterford, Mass.: I claim, first, suspending each leaf of harness from two jacks, which are of similar form and length, and are geared together by toothed sectors, as described, for the purpose of preserving an uniformity of motion to both ends of the harness.

Second, attaching the knife to the levers and applying springs to the same, in such a way that it will move on the levers in its descent, in closing the shed sufficiently to pass the points of those hooks of the ascending portion of the harness, which are in a position to be raised to make the succeeding shed, and after passing the points of the hooks, will slip under them, as described.

Third, suspending the heddle frames or the top rails, by means of sheet or hoop iron links, which are pivoted to the jacks, and are furnished with pins to enter slots or notches in the ends of the top rails, as set forth, by which a simple means of attachment and detachment is obtained.

[This is an excellent improvement. See notice on page 290, Vol. 8, Sci. Am.]

TEMPLES FOR LOOMS—By J. B. Greene, of Worcester, Mass.: I claim the arrangement, as described, of the roller, adjustable guard, and springs, upon the axle, which is parallel with the weft. whether the said roller and guard hold the cloth between two conical faces, or by teeth on the roller.

[See notice of this invention on page 300, Vol. 8.]

CUTTING GEAR OF STRAW CUTTERS—By John Jones & Alex. Lyle, of Rochester, N. Y.: We do not claim the knives, heads, or flanges, which form a part of the heads separately. But we claim the combination of the knives and segments of flanges (which are attached to and form a part of the heads) the knives being placed on the inside of the flanges, instead of the outside, in the manner and for the purpose, as described.

FASTENING THE TEETH TO CLOVER HULLING CYLINDERS—By Samuel Karns, of Bloody Run, Pa.: I claim the binding of the teeth to the hulling cylinder, by means of the wire band. as set forth.

LOOMS—By Jonathan Knowles, of Cohoes, N. Y.: I claim the combination of inclined guides with the whip roll, for the purpose of graduating the tension of the warps, as set forth.

SCREENS OF WINNOWERS—Abraham Lash & M. Moore, of Bellerville, Ohio: We do not claim any form of any mill or shoe: but we claim the two fluted cleaners, or their equivalents, and the combination of said cleaners, as set forth; the same may be used in any common winnowing machine.

WIRE FENCE—By Wm. H. Meriwether, of Comal Co., Texas: I claim the employment of the undulating or zig zag wire for fencing, substantially as described, which by its elasticity, increases the durability and effectiveness of the fence, as specified.

GRAIN THRESHERS AND SEPARATORS—By A. B. Peterson, of Dexter, Mich.: I claim, first, the raddle, with swinging sections, as described, in combination with the interior carrier or elevator, to separate the grain from the straw, and discharge the grain on to the riddles under the head of the carrier or elevator, with the effect of permitting the cylinder and concave to be set low down as set forth.

Second, the running of the raddle and carrier or elevator, on separate and independent pulleys, in the manner set forth.

Third, the introduction of the protecting apron between the carrier or elevator and raddle, to serve the double purpose of preventing the straw from driving through the raddle, and protecting the carrier or elevator. from abrasion by the grain, as set forth,

Fourth, hanging the riddles or the riddle and wheat board, to upright standards, as described, to give the upper riddle the longest stroke.

KEYED FINGER BOARDS FOR VIOLINS—By Wm. Robertson, of New York City: I claim combining with the finger board of a violin or like musical instrument a supplement keyed finger board, constructed and operated as described.

ATTACHING THE SHAFTS OF VEHICLES TO THE AXLES—By S. E. Sturtevant, of Hartford, Vt.: I claim securing the shafts of vehicles to axles by means of an eye or collar, having taper or conical ends which fit in adjustable stocks, the ends of the collar being kept firmly in the sockets, by means of the screw bolt, the collar and sockets being attached to the shaft and axle, in either of the modes described.

[See notice on page 116, Vol. 8. It is a good improvement, worthy of the attention of carriage makers.]

OPERATING VIBRATING PROPELLERS—By Thos. Spiller & Anthony Crowhurst, of Middlesex Co., Eng. Patented in England Feb. 3, 1853 We do not confine ourselves to the shape of the vanes, blades, or fins, nor to the number applied, as there may be two or more sets used, or to the part of the vessel where the same may be applied, as at the stern in the midship or elsewhere below the water line, neither do we confine ourselves to the arrangement, as described, for giving motion to the propeller, or for regulating or reversing the action of the same.

But we claim vanes, blades, or fins, of whatsoever form, or wheresoever applied, in a vessel for the purpose of propelling the same, when such vanes, blades, or fins, are mounted on an axle or shaft, vibrating or turning freely upon its axis, and moving vertically through the water.

RAILROAD CAR VENTILATOR—By Geo. Spencer, of Utica, N. Y.: I claim the application of a single throat being the termination of a gathering or gradually contracted opening, in combination and immediate connection with a single enlarged air chamber, directly above a surface of water for the purpose of freeing the air forced into the car, from dust and cinders, thus enabling the dust and cinders to fall upon the water, by their own gravity alone, as described,

REVOLVING MUSICAL SCALE—By S. D. Tillman, of Seneca Falls, N. Y.: I claim the employment of a fixed disc, on which the musical intervals within the octave are represented by divisions of a circle, and the letters commonly used to designate the notes of the fixed scale, in combination with one or more arms, discs, or rings rotating around the center of the circle of the fixed disc on which rotating arms, discs, or rings, are the true and tempered divisions of the diatonic scale, so arranged that the relations of these divisions of the diatonic scale with those on the fixed scale, may be clearly seen when the point designating the tonic or key note, on the moving scale is placed opposite of any of the divisions of the fixed scale, as set forth.

WAGON BRAKES—By W. D. Williams, of Raleigh, N. C. I do not claim a double crank attached to the front hounds of the wagon, and connected to the brakes behind the wheels, for applying the power through the action of the horse, forward and backwards.

I claim forming two swinging or rolling joints between the front axle and the front hounds, in combination with the swinging brake, arranged on top the reach and in front of the wheels for the purpose of rendering the wagon more perfectly self-locking or for applying the brakes simply by the aid of the horse and wagon, and disengaging them by the forward action of the former, the whole being as described.

I also claim making the brake capable of swinging on a center, so that it may be thrown over toward the front of the reach, when it is desired to dump the load, and again thrown to its proper place after dumping, as set forth.

[See notice of this invention on page 196, Vol. 8.]

WASHING MACHINES—By Joel Wisner, of Aurora, N. Y. I do not claim the use of a horizontal circular rotary wash board in the bottom of a wash tub, when they are used with the ordinary radial flutings.

But I claim making the said wash board of a conical form, having its surface higher above the bottom of the tub, at the circumference than at the center, and attaching to it and to the bottom of the tub radial ribs of the form of a half cone, when these ribs are formed of such depth, and with spaces so wide between them as to receive the clothes in these spaces in such a manner as to turn or roll them over as the board is rotated back and forth, as described.

WINDOW SHUTTER BOLTS—By Samuel Green (assignor to Samuel Green & Cornelius Arnett), of Lambertville, N. J.; I claim the spring and drop or tumbler, arranged with reference to each other and the notch in the case, as described, and so formed and located that they may be acted upon in the manner described, by a single key.

MANUFACTURING ICE—By A. C. Twining, of Hudson, O I do not claim the exhaustion of a vessel containing ether, and immersed in water, around which the water freezes, and to which the ether is returned, after condensation in the restorer.

I claim, first, the combination of an exhausting pump or apparatus that is also condensing or compressing, with a restorer and with a freezing cistern, having water chambers, as described.

Second, I claim the same pump and restorer, in combination with a separate exhaust vessel, in or around which the ether or other liquid uncongealable, at the temperature employed, is coned and made to pass into the freezing cistern, and there perform its office, as described.

Third, I claim the percolator or apparatus introducing into the cistern or the separate exhaust vessel, the ether or volatile liquid in jets or drops, as above, in combination with the exhaust pump and restorer.

Fourth, I claim the use of the water vessels in combination with the water chambers, and the intervening liquid for perfecting contact, as set forth.

Finally, I claim, in combination with the restoring apparatus, the cooling of the liquid around the same, by exhaustion, using therefor the secondary pump and connections, as set forth.

DESIGNS.

PARLOR STOVE—By Ezra Ripley & N. S. Vedder, of Troy, N. Y. (assignor to G. W. Eddy, of Waterford, N.Y.)

COOKING STOVE—By N. S. Vedder, of Troy, N. Y.

SEWING BUTTERFLY—By John Lane, of New Haven, Conn.: I claim the design of a butterfly bending over a flower, when adapted and arranged for an instrument for holding, sewing or other like work, as shown.

The Polar Plant.

MESSRS. EDITORS— I saw it stated in a back number of your paper, that at a meeting of one of the "scientific associations," certain inquiries were made, and opinions given, relative to the polar plant. It appears to have no magnetic properties, for it has no perceptible influence on the compass needle, and floats indifferently in any direction on water; and probably turns the edges of its leaves in a polar direction, that each side may receive, one the morning and the other the evening rays of the sun, as trees incline over a road, or other open space, for the benefit of the light and air. Near the ground the leaves grow from one to more than two feet in length, and often 12 or 15 inches wide; those growing on the north and south sides of the stock appear to twist in the stem (which in tall grass is a foot or more to the commencement of the leaf), so as to bring the leaf in a polar direction; and as they approach the top of the stock on the same sides, having much shorter stems, the leaves often assume a spiral form, their upper edges pointing north and south, and their lower ones east and west, while those growing on the east and west side of the stock, having the required direction retain their natural form.

A kind of gum, in smell and appearance resembling turpentine, exudes from the stock, hence the name of rosin weed which it bears in this country. As it grows only in damp land, it is one of the signs, by which the settler is governed in making choice of a farm, in the West. It appears to be designed by the great Author of Nature, as a guide to the pathless traveller through the prairies, for as soon as the land becomes settled, and much grazed and trampled by stock, being no longer necessary for that purpose, it ceases to grow.

H. POLLARD.

Lafayette Co., Mo.

Foreign Scientific Memoranda.

IMPROVEMENTS IN METALLURGY—PURIFICATION OF TIN.—At the Royal Cornwall Polytechnic Society, Mr. J. A. Phillips (formerly of the Museum of Economic Geology,) said that one of the most important improvements which had taken place in manufacturing arts came into operation last year—the separation of silver from lead by means of zinc. He then described the old method of separation; and the subsequent process discovered by Mr. Pattinson, of Newcastle-on-Tyne, involving several crystallizations and a final cupellation. Still more recently, a patent had been taken out by Mr. Parks for a process by which he separates the silver entirely by one operation. To do this, the alloy of silver and lead is melted in the usual way in a large iron pot. To this a small quantity, a few pounds of zinc per ton, is added, the whole mixed up and allowed to remain a short time. By this means the silver is brought to the surface in the form of alloy with zinc, and this mixture is subsequently skimmed off and treated for the silver it contains. In order to do this the zinc is first partially separated by oxydation and the residual alloys afterwards treated in the cupel. In connection with the purification of metals he might mention some of his own experiments in regard to tin. The tin from Peru and some other countries contains a large amount of tungsten, or wolfram, which very much depreciates its value; till recently, this tin could only be employed for very common purposes, such as making tin pipes, and other things, which did not require tin of a good quality. But in analyzing some of this tin he happened to discover a process by which the separation was very easily effected, and this process has been recently patented. It consists in taking impure tin containing from 5 to 10 per cent. of tungsten (worth £25 per ton less than tin of ordinary purity), granulating it by melting it in a reverberatory furnace, and allowing it to flow into a vessel containing water.—This granulated tin is then placed in a pan with common hydrochloric acid, which may be obtained from the soda manufacturers at almost a nominal price. This being heated, hydrogen gas is evolved, and a solution of chloride of tin is obtained. In this operation it is necessary the tin should be present in excess; unless it be so, a certain portion of tungsten is dissolved.—Should, however, the operation be carried on too far, and a portion of tungsten be dissolved, the addition of a small quantity of impure tin precipitates the tungsten, and chloride of tin free from tungsten is obtained. This is turned off into a vat, in which more granulated impure tin is placed, and any arsenic or antimony remaining is there deposited, and a pure solution of chloride of tin is obtained. Into this bath are put bars of metallic zinc, which precipitates the tin in a spongy mass, when instead of chloride of tin chloride of zinc is obtained. The tin thus produced may be fused into bars, or sold as the best tin. The chloride of zinc must be so used as to lower the expense of the whole process, to do this it is precipitated by milk of lime, or common chalk; to get oxyde of zinc, which is largely used as a pigment, and to give it sufficient opaqueness for that purpose, the washed oxyde of zinc is heated to redness, when it is found to be equal to the ordinary oxyde of zinc obtained by sublimation.

TIN OF NINEVEH.—Mr. Layard, in his work upon Nineveh and Babylon, in reference to the articles of bronze from Assyria, now in the British Museum, states that the tin used in the composition was probably obtained from Phœnicia; and, consequently, that used in the Assyrian bronze may actually have been exported nearly three thousand years ago from the British Isles.

THE PLOW SUPERSEDED.—Mr. Mechi has published a letter, in which he says:—"A calm and rigid investigation and computation have convinced me that the doom of the plow, as an instrument of culture is sealed, and that the rotary forking, or, as it is wrongly called, digging machine, is the only profitable cultivator.—Even with six or eight horses it is cheaper and infinitely more effective than the plow."

SMOKELESS CHIMNEYS, AND SAVING THE PRODUCTS OF COMBUSTION.—Major Browne, of London, has recently patented an apparatus for preventing the egress of smoke from the tops of chimneys. The invention is applicable to old chimney shafts, or in the construction of new ones the height might be very considerably reduced. The top of the chimney is closed in, and at about half-way up in those of present construction an opening is made in the side as large as the structure will allow. Outside this an iron box is firmly secured, in which is a foliated revolving cylinder, its axis placed horizontally, having a grooved pully geared to the motive power by which it is set in motion.—The leaves of this cylinder are curved downwards in the direction of its rotation, to facilitate collecting and carrying downwards the solid particles of carbon, and the denser vapors into a tank beneath, containing water, and in which it partially revolves. This tank has two openings, one to insert fresh water, the other to withdraw the collected matters. When the smoke reaches the opening it comes within the immediate action of the draught caused by the rapid revolution of the vanes, and is quickly condensed in the cold water trough.

MECHANICAL PROPERTIES OF METALS.—At the British Association, Mr. W. Fairbairne, C. E. read a Report on the Mechanical Properties of Metals, as derived from repeated Meltings, exhibiting the maximum Point of Strength, and the causes of Deterioration. The experiments on which this report was founded were undertaken at the request of the British Association. Mr. Fairbairn said that it was generally supposed that the strength of iron was deteriorated after three or four meltings, but the results of his experiments proved that opinion to be erroneous. The metal experimented on was Englinton hot blast iron, and the quantity was 1 ton. In melting the iron the proportions of coke and flux were accurately measured, and proper precautions were taken to prevent any difference in strength from variations in cooling and casting. The metal was run into bars 1 in. square—length of 7 ft. were supported on two points, and weight was applied in the center till the bars broke. It was found that the strength of the iron bars increased up to the twelfth melting, after which it diminished, and at each successive melting deteriorated rapidly. The breaking weight at the commencement was 403 lbs., and the deflexion of the bar before breaking was 1½ in.; at the twelfth melting the breaking weight was 725 lbs., and deflexion 1⅞ in.; at the thirteenth melting the bar broke with a weight of 671 lbs.; at the fifteenth, with 391 lbs.; at the sixteenth, with 353 lbs.; at the seventeenth, with 330 lbs. At that point the experiments were discontinued, as the quantity of iron had been so far diminished by waste and by reserving specimen bars, that no further trials would have been satisfactory. Mr. Fairbairne exhibited specimens of the bars at the various meltings. The fracture of the iron in the later experiments presented a marked change. In the fifteenth melting there was a bright rim like silver surrounding the interior, which was of the usual crystalline structure.—This bright silvery fracture extended in the sixteenth and seventeenth specimens till it pervaded the mass, which then resembled cast-steel.

The William Norris.

MESSRS. EDITORS—Believing that when in error you are quite willing to be corrected, I have deemed it due to you as editors of a scientific journal, that you should be put in possession of the fact, that the "William Norris" is 1461 tons government measurement and 1267 tons, carpenters measurement.

JOHN W. GRIFFITHS.

English Railway Statistics.

Mr. Neilson, who has paid much attention to railway statistics, adduced the following curious computation in illustration of the comparatively few deaths caused by railway accidents:—That if a person were born in a railway carriage, and were to be continually travelling on railways till he was killed by an accident, he would, according to the average number of passengers and deaths, live 960 years.

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New Inventions.

Improved Saw Mill.

Stephen Waterman, of Williamsburgh, N. Y., has invented an improved saw mill, and has applied for a patent. This improvement consists in so hanging the saw that during one longitudinal movement of the carriage, the saw, which is circular will cut half way through the log, and during its return movement will finish the operation by completely separating the board from the log; the driving belt is always loosened when the saw is not in action. The saw-shaft is elevated above the top of the carriage in cutting off the slabs, so that the nut and collar used for fastening it to the arbor may work close under the unsquared part of the log, thus enabling it to slab a larger log than could be done without this arrangement. The under part of the slides, by which the log is fed laterally across the carriage, is furnished with dogs which have teeth protruding beyond the faces of the slides and under the log into which they are forced by means of screws. These being used in conjunction with those commonly employed, the log is firmly held in its place. Some of these are excellent improvements.

Lath Machine.

Charles F. Packard, of Greenwich, Conn., has invented an improved lath cutter on which he has taken measures to secure a patent. The frame of his machine is provided with two horizontal bed rails placed at a proper height, on which is a lever frame or toggle joint, which gives motion to a series of cutters which are placed longitudinally in a stock and parallel with each other, the spaces between them being the width of the lath to be cut. The log or block from which the lath is to be cut is fed up by a motion corresponding with the thickness of the lath. The inventor claims that this machine will operate favorably in circumstances where no other will, and that slabs, or any other refuse lumber, can be worked with the greatest facility.

New Trip Hammer.

John W. Peer, of Schenectady, N. Y., has applied for a patent upon an improved trip Hammer. This invention consists in raising and lowering the hammer by means of a screw cam arranged upon a circular plate secured to a revolving shaft, and connected to the helve of the hammer by means of a horizontal lifting arm which has one of its ends attached to the hammer by set screws, and its other end sliding freely up and down over the vertical cam shaft, as the hammer rises and falls. The screw cam is also arranged upon an adjustable frame so that it may be adjusted to any position desired and the length of the hammer stroke regulated, so that a full or partial blow may be given.

Primer for Fire-Arms.

A. N. Newton, of Richmond, Ind, has invented an improved self-acting primer for fire arms. The invention consists in a light lever furnished with suitable fingers to hold a percussion cap, and connected by suitable mechanism with the cock of the gun, the movement of which will cause the fingers to take a cap from one of a series of studs on a revolving cylinder or its equivalent which is fitted to the side of the gun lock for this purpose. To this lever a fork is so attached that when the fingers before mentioned seize a cap, the said crook or fork will partly encircle the nipple, and the movement of the lever will cause it to withdraw the exploded cap from the nipple. The inventor has applied for a patent.

Improved Cut-Off.

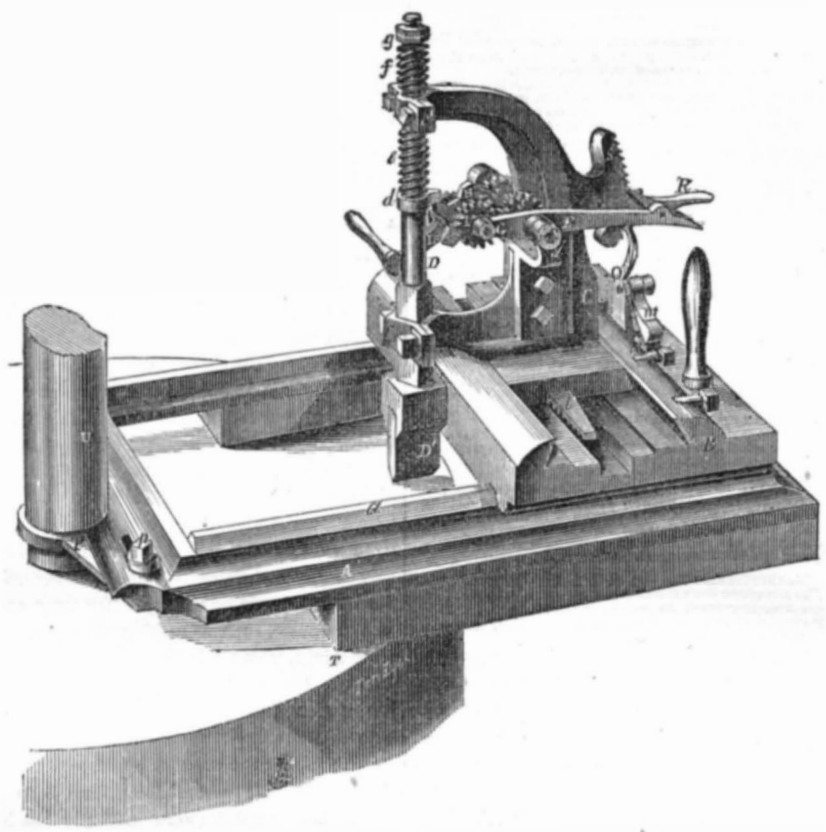
James Montgomery, of Bridgeport, Conn., has applied for a patent on a new cut-off valve for steam engines, the nature of which consists in the employment as a cut-off of two cocks which are fitted to the slide valve in such a way as to be capable of opening and closing the passages in the valve through which the steam passes to the steam ports of the cylinder, which cocks are actuated by means of levers which are brought in contact with them by the motion of the slide valve and by adjustable straps in the steam chest.

MACHINE FOR DRESSING MILLSTONES.

This engraving is a perspective view of a machine for dressing millstones, invented by J. G. Shands, of St. Louis, Mo. The nature of this invention consists in placing the wiper wheel which operates the pick spindle or arbor, within a swinging frame, by which a greater or less vibration may be given the arbor and the pick be made to descend upon the stone with the requisite degree of force; and also in the employment of a spring arranged in combination with the swinging frame, by which combination the force of the blow given to the pick can be accurately graduated.

A represents a rectangular frame, on the upper part of which a carriage, B, is placed, which fits on a way, *a*, on one side of the frame; C is a stock, the base of which fits in the carriage, B, in a dove-tail groove or recess seen in the engraving, in which it slides. On the front of the stock is the pick-arbor, D, which works in suitable boxes, *c c'*. On the arbor there is a fixed collar, *d*, between which and the upper box, *c'*, there is a spring, *e*, said spring encompassing the arbor.

Around the arbor and above the upper box, *c'*, there is another spiral spring, *f*, the upper



part of which bears against a nut, *g*, on the upper part of the arbor, on which a short screw thead is cut; D' is the pick secured to the lower end of the arbor; E is a V-shaped swinging frame, having a hub, or boss, *n*, at each side, through which a shaft, F, runs, sitting in bearings, *i i*, at the ends of arms, *j j*, which project outward at each side of the stock, C.

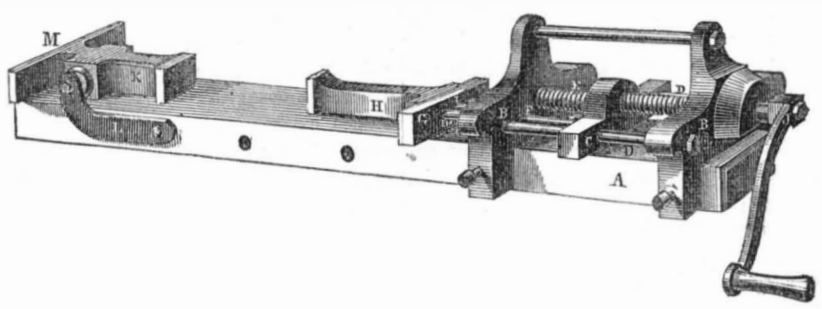
G is a shaft at the front of the swinging frame, having upon it the wiper wheel, H, and two spur-wheels, I I, gearing into two others, J J, on the shaft, F; L is a crank at one end of the shaft, F. There is a shaft placed in the carriage B, having a pinion on its inner end, which gears into the rack, *l*, and on its outer end the ratchet wheel, N, into which a pawl, *m*, catches, which is attached by a pivot to the upright lever, O; P is a ring or collar attached by the pivot, *p*, to the front part of the frame; R is a pawl at the back of the swinging-frame, catching into a rack, S, on the back of the stock.

When in operation the implement is placed on the stone, T, to be picked or dressed, and the ring or collar is placed over the spindle, U, at the center of the stone, so that the frame, A, will be in line or parallel with a section of furrows upon the stone. The crank, L, is then turned and the wiper wheel H, as it rotates, strikes against the collar, *d*, and raises the pick, which is forced downwards by the re-action of the spiral springs. The length of the vibrations of the arbor may be regulated by adjusting the frame, E, by the ratchet, S, and pawl, R. The carriage, B, is gradually moved back and forth upon the frame, A. By means of the pivot, *p*, which works in a slot in the frame the line of the furrows can be set any desired angle with the radius.

We are disposed to think this an excellent machine for the miller. We should think its motions are what is required to dress millstones accurately. One of the full sized machines is on exhibition at the Crystal Palace.

For more information address the inventor at St. Louis.

IMPROVED CLAMP FOR JOINERS.



This engraving is an illustration of a clamp for the use of joiners. A is a piece of plank or scantling of any desirable length dressed to the proper size; B B are castings connected together by the rods, D D, on which the slide, C, is worked by the screw, E. The rods, F F, connected with this slide are also connected with the clamp, G, consequently by turning the crank, J, a door or other piece of work placed between the jaws, is firmly compressed. As now seen, the jaws are narrow, thus fitting between the tenons in a double mortise, but H may be removed from G; and by means of the strap, L, the block M K, which is pivoted between L and its companion strap the side, M, of the clamp can be presented to the work.—This is a very convenient tool, and we wouldrecommend it to the notice of joiners. It was patented August 9th, 1853, by Benjamin H. Green, Princeton, N. J. Orders should be addresssed to C. Dinsmore & Co., No. 9 Spruce street, N. Y.

Improved Throttle Valve.

Thomas W. Keating, of this city, has invented an improved throttle valve, the nature of which consists in the employment of a valve, formed of a hollow cone, with a number of longitudinal slots, or of a number of segments of a hollow cone fitted in a conical seat, which has suitable openings to correspond with openings in the valve. This valve is so arranged that steam is admitted on all sides to balance it. The taper of the cone used is very gradual, being only sufficient to allow the valve to be made tight in its seat as it wears, and the valve spindle is controlled by screws at each end, so that the valve may be always kept properly tight without undue friction.

New Tea-kettle.

Lucius Paige, of Cavendish, Vt., has invented an improved tea-kettle, which is constructed by placing in the bottom of an ordinary tea-kettle, several elbow-shaped flues open at the bottom and at the sides just below the flange. By this arrangement a larger amount of heating surface is obtained, and the water is made to boil in much less time. A very good idea certainly. The inventor has applied for a patent.

Improved Rack Rail.

Peter Kanouse, of Sussex Co., N. J., has invented an improved rack rail for assisting locomotives in ascending steep grades, which consist in placing between a rack rail of the ordinary construction a series of springs or other elastic supports, to prevent damage to the cogs from their not gearing properly with the rack. The inventor has applied for a patent.

The Ericsson Again.

As we intend to keep our readers posted up on the subject of the Ericsson, we will give them, this week, a sketch of the plan of his new engines, now being built at Messrs. Hogg & Delamater's, foot of Thirteenth street, in this city. As we have already stated, they are in principle identical with that of Stirling—Ericsson having entirely discarded his "regenerator," and returned to the original plan of using the same *air* over again, but making no attempts to re-employ his *heat*. It seems from this that experiment has convinced him that his views concerning this feature of his engine were, as we have so often asserted, wholly at variance with science and philosophy, and as he claimed that in this regenerator was stored the great advantage of his, over the steam engine, we are unable to see on what grounds he will claim any superiority for this one.

Immediately above the fire is placed six layers of cast-iron pipes, nine feet in length and three and a half inches in diameter; above these pipes are two heaters, 9 feet in length and 2 feet 5 inches in diameter. These heaters are filled with tubes 2 inches in diameter, through which pass the flame and smoke from the fires. The cylinder is 5 feet 2 inches bore, and about 7 feet stroke. He also employs a *cooler* 10 feet in length, and 3 feet in diameter, filled with tubes 1½ inches in diameter; among these tubes circulates a supply of *cold water* for the purpose of condensing the air after it has passed from the cylinder. These various parts communicate with each other, but not with the external air—the cold air from the cooler passing in the heaters, then through the cast-iron pipes immediately over the fire, then into the cylinder and back to the cooler again. Hence all the heat imparted by the fire to the air is given off to the water in the cooler, and is as fully lost as in the steam or any other engine.

This is certainly more philosophical than the other because it does not attempt to do what is wholly impossible; the question is now narrowed down to the relative economy of using the expansive force of air or of water as a motive power. We have already discussed this point somewhat, and we shall not at present renew the discussion. The heating surface of this is also far greater than that of his last engine, but we cannot see any ground for supposing the performance of these engines to be very much superior to that of his former ones. If we had sufficient data to enable us to make a calculation, we could speak more definitely.

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Scientific American.

NEW YORK, NOVEMBER 19, 1853.

Extension of Patents, and Patent Law Suits.

A statement has lately appeared in one of our daily papers, to the effect that a number of interested capitalists with their seat of operations in the city of Washington, have formed an Association with a capital of $500,000 for the purpose of procuring the further extension of the Woodworth Planing Machine patent, also the Hayward Patent for manufacturing india rubber, and the Telegraph Patent granted to Prof. Morse, April 11th, 1846. The intention is to accomplish this result by a special act of Congress during its next session. There must be some error in including the patent of Prof. Morse, inasmuch as it has yet seven years to run, and the extension, if any, should be granted under our general laws. It is possible, however, that the owners of the patent anticipating its rejection by the Commissioner of Patents, are thus providing in due season to supercede the general law by obtaining a special act. To be fully convinced of this, however, we shall need more light upon the subject, but, from information received from other sources, we are led to believe that large sums of money are being collected to obtain the extension of the two first patents. As most of our readers are well aware, the Woodworth Patent has been twice extended, and is therefore the most aggravated case, and when application was made at the last session of Congress for its re-extension, it met deservedly with a withering rebuke, and was actually kicked out of the House.—Doubtless some of the paid advocates of this scheme are now heartily ashamed of the part they took in this dirty transaction. The extension of the Hayward Patent was refused by Commissioner Hodges, and his reasons are given in the Patent Report for 1852, they are able and cogent, and are founded upon a clear and unmistakeable knowledge of the law and facts involved in the case. The Commissioner of Patents is by law duly invested with the right to extend patents for seven years from their expiration, and has more time and is much more competent to decide such issues, than the members of Congress, hence, under all circumstances, we are opposed to the extension of patents by acts of Congress, for our general patent laws are adequate to meet these cases, and if injustice is done it can be redressed in our Courts. We are opposed to the further extension of these patents for the following reasons:

1st. Because the applicants for the extension have already amassed enormous amounts of money from these inventions. Woodworth has been long in his grave, but his heirs and assignees have grown rich from the invention, besides having spent fortunes in litigation.—Hayward, although he received originally but a small compensation for his patent, has nevertheless been a large stockholder in a company working profitably under his own patent, and has no doubt realized a rich reward for his ingenuity, hence we assume that the decision of Mr. Hodges is characterized by justice and equity.

2nd. We are opposed to the extension of these patents because they have been so managed by the owners as to injure deeply the interests of inventors, and to cause the public to become dissatisfied with our whole patent system, which is one of the most noble institutions in our country. We have always advocated the interests of inventors, and have defended their just rights, but in opposing the extension of these patents we plant ourselves upon the foundation of the rights of the people, who, as well as inventors are deeply interested.

Nor has any course of conduct, even to inventors, been so injurious as the endless series of law suits which have been instituted and carried on in almost every State of the Union, and in England itself, which is now beginning to feel the effect of this *elastic* subject. The amount of money used in litigation, and the threats which have been employed by patent capitalists to over-awe the less wealthy or more timorous persons engaged in the same business, have been the means of depreciating the value of patent property in general.

Many who would gladly purchase patents and engage in the manufacture of the articles protected by them, have been prevented from doing so by fears of being involved in vexatious law suits.

3rd. The very fact of an association being formed to procure the extension of these patents is of itself a sufficient reason why they should be energetically opposed, it implies a low and disgraceful estimate of the Representatives of the American people. It is equivalent to the assertion that as a body they have become so venial that they may be *bought* to the support of any scheme, however unworthy, and that no longer can we look for honest and faithful legislation for the true interests of the people.

Forbid that our national integrity should thus be weighed in the balance, with the gold of the unprincipled and the wealthy, and that the scale with its load of sordid dust should preponderate. The man or set of men who dares approach the halls of legislation actuated by such motives deserves to be transported to some Botany Bay, and placed under the spiritual charge of some devoted missionary. We cannot but characterize, as moral conspiracies against the integrity and liberties of our country, the banding together of individuals and the employment of money to influence the legislation of Congress in any way, and especially to pass acts which could not receive the sanction of our general laws. It is unfortunately too true that the American Congress has many times been influenced by the outside pressure of monied men, and that there are those constantly dancing attendance at every session engaged in the promotion of any scheme, however disgraceful, for advocating which they can obtain the means of living without honest industry. By such means as these the public treasury has been repeatedly plundered, and the just claims of many have been set aside. We once heard Jefferson Davis declare in the Senate, that unless these disreputable practices could be stopped, he would soon expect to see the stolen remains of the "Father of his country" offered for sale in the halls of Congress.

The extension of these patents is a subject deeply affecting the interests of our entire people, and unless energetic means are adopted to bring public sentiment to bear forcibly upon Congress, we may be again saddled with these powerful monopolies. We were strongly of the opinion that the scathing Report of the Chairman of the Committee on Patents would have silenced the advocates of the Woodworth Patent extension forever. We have always opposed it, and no threats, intimidations, or overtures can swerve us from our course, although it may be united to an ally as powerful as the India Rubber Company. We have sounded the alarm, and shall endeavor, if necessary, to arouse an energetic opposition, which will be sensibly felt in the proper quarter, unless the advocates of these schemes relinquish their dishonorable intentions. The time was when the American people could not look without indignation upon corruption in any shape, and it cannot be that after a period of 77 years existence our country can have fallen so low as to regard with favor such an organized system of corruption as this. Justice, Patriotism, and Morality cry aloud against it, and we hope yet to learn that the owners of those patents "are not deaf to reason and insensible to shame.'

In the case of the Woodworth patent there is every just reason why it should never again be extended, and as for the india rubber case, to extend it, would be in defiance of the Patent Law and the decision of Commissioner Hodges.

Patent Office Report for 1852---No. 4.

EXAMINER GALE:—AGRICULTURAL IMPLEMENTS.—Of the 167 patents passed at the desk of this Examiner, no less than 114 were for agricultural implements, thus showing the activity of invention in this, the greatest and most important field of national strength and wealth. Out of this number of agricultural patents, 27 were for harvesters—power reapers, mowers, &c. It mentions the patent granted in 1851 to Watson & Renwick, for a machine to bind and cut grain automatically, an improvement on which was patented in 1852, by which the whole cutting, raking, and binding operations are performed. This harvester, not being noticed by us heretofore, we will briefly describe. The machine is twice as broad as it is long (double the length from side to side, as from front to rear.) One side is occupied with the cutting, and the other with the binding mechanism. The cut grain falls upon an endless apron, is then carried horizontally towards the binders, and is delivered between a pair of parallel inclined ascending endless aprons, which carry it up to the top of the binding apparatus, delivering it into an oblong crib, which is supplied with rakes and arms, which let down into encircling compressing arms, just grain enough to make a bundle,—these compressing arms hold the bunch of cut grain firmly, whilst a cord, which has been previously thrown across the crib by an automatic motion of the machine, is carried down by the descending grain, and is then drawn by the machinery, tied into a knot, and the end cut off. The side of the crib then opens, and the sheaf falls on the ground; after this the crib closes to receive another bunch. The movements of the binding and tying apparatus are performed by cams. None of these machines, we believe, are in operation. The exceedingly ingenious grain reaper of Atkins, illustrated in No. 6, Vol. 9, Scientific American, is noticed by the Examiner, who speaks of it in flattering terms, saying, "its operation presents a beautiful piece of workmanship." In the construction of farmers' implements and machinery, simplicity, lightness, and strength of parts should never be overlooked. Our farmers want machines that will require but little repairing, and what little they do require should be of such a nature as can be done in the field or in the barn-yard. It will not pay for our farmers to be running to the blacksmith's, or machinist's shop for every little repair required, on a harvesting or other machine. A patent was granted to G. H. Rugg, of South Ottawa, Ill., for an excellent improvement to clear the passage of the cutters and prevent clogging in mowers and reapers.

Three patents were granted for horse-power potato-digging machines; the models of two of these we have seen, but have not yet had the pleasure of seeing a large one in operation. Fifteen patents were granted for improvements in plows, and four for cultivators. No less than 26 were granted for seed planters. This number is very large, considering that such machines are of no recent origin; it shows the importance of this class of machines, and the dissatisfaction entertained with those already in use. The devices patented, however, were mostly confined to the mode of distributing the seed—the novelties patented are stated to be small, but that of B. D. Sanders, of Holidays Cove, Va., for operating the shove rod to work the valves by friction rollers and rotary cam, is a very good one. Three patents were granted for horse rakes, and eight for threshers and separators; one of the latter consisted in having an inclined rotary cylindrical straw carrier supported on friction rollers. This cylinder is full of holes, and as the straw is carried up, the grain falls down through the openings. Ten patents were granted for hullers and smut machines—one of them being for washing, scrubbing, and drying the grain. One patent was granted for a weigher combined with a winnower. The weighing apparatus is secured in such a manner to the machine, that when the measure is filled up to the proper weight, the balance tips the weighted grain, which is thrown upon inclined ways, and immediately starts off on a railroad track to the grain depot. Four patents were granted for corn-shellers: in one the ears are allowed to accumulate to act, in the mass, as an elastic bed against the spiral shelling projections. Three patents were granted for straw cutters, and nine for miscellaneous agricultural implements, one of them being for a metallic tube scythe snath.

This closes our brief review of the Report of Examiner Gale. We must give our farmers and our machinists, devoted to the construction of agricultural implements, great credit for what they have done in 1852. There is still a wide field for improvement, and as agricultural patents are so valuable, we anticipate a great increase of inventive activity in the production of future improvements in this class of machines.

Photographs of the Moon.

At the late meeting of the British Association for the Advancement of Sience, a communication was read by Prof. Phillips, on Phototographs of the Moon, in which he makes honorable mention of Mr. Bond, of the Cambridge Observatory, and Mr. J. A. Whipple, of Boston, for their admirable photographs of the moon, the first perfect ones ever seen in England.—After speaking of the great value of the photographic process, and the desirableness of using the process to obtain maps of the moon, Prof. Phillips says:—

"When, therefore, at the Belfast meeting of the Association, the three-inch daguerreotype of the full moon, which had been taken by Prof. Bond, from the great achromatic of Cambridge, U. S., was shown to astronomers, their gratification was extreme. Humboldt possesses one of these curious light pictures of the moon of two inches diameter, prepared by Mr. Whipple, of Boston, U. S., in which the so-called seas and annular mountains are clearly distinguished. (Cosmos, III, part ii, 362.) The committee to whom the Association, at its Belfast Meeting, committed a survey of the physical aspect of the moon, were not negligent of this powerful aid to an accurate drawing."

In referring to the same subject Prof. Hopkins said he thought it not improbable that we should soon be acquainted with the geology of the moon on a much grander and more extensive scale than we were yet of the earth. The distance of the moon from us, by which we were at once presented with one half of her surface, gave an advantage to those who studied lunar geology which terrestrials could not attain to. What would be the cost, and labor, and time that would be required for trigonometrical surveys which could compete, after all, in accuracy very badly with the trigonometrical surveys of the lunar surface which he had little doubt these photographic processes would soon put us in possession of? It was also a considerable advantage that from our situation we were enabled to pass down into craters and cracks; and while, from any similar examination, we were shut out with regard to the earth. It was also his opinion that many of the large and extensive fissures, and other extensive disturbances on the moon's surface, originated in causes identical with those which gave rise to some of the disturbances of the earth's crust; and that these phenomena in the moon might lead to a reflex extension or correction of our geological knowledge with regard to the earth. Mr. Grove expressed his conviction that photographic delineations of the moon of extreme accuracy would after no great lapse of time, be obtained, which would aid most materially in the study of the condition of the surface of that satellite, and, perhaps, lead to a knowledge of the origin of many of its peculiarities.

Mr. Whipple has recently made some pictures of the moon on a larger scale than any attempted by him before. We are indebted to his kindness for three copies, one taken at the crescent, another at the quarter, and the third at full moon. They are deeply interesting works of art, and we prize them highly.—By a careful examination of them, Mr. Grove would have his knowledge of the surface of the moon *considerably increased*. They confirm all that has been said of great volcanic activities in our satellite. Independent of deep fissures and yawning craters, the fissures themselves appear to be covered with cairns and banks composed of huge blocks like boulders, which appear to have been vomitted up in lava, then fallen down in showers, like those of hailstones or shot.

PRIZES!! PRIZES!!

The following Splendid Prizes will be given for the largest list of mail subscribers to the Scientific American, sent in by the first of January next:

$100 for the largest list.		$30 for the 7th largest list.	
$75 for the 2d largest list.		$25 for the 8th	ditto
$50 for the 3d	ditto	$20 for the 9th	ditto
$45 for the 4th	ditto	$15 for the 10th	ditto
$40 for the 5th	ditto	$10 for the 11th	ditto
$35 for the 6th	ditto	$5 for the 12th	ditto

The cash will be paid to the order of the successful competitors immediately after January 1st, 1854.

These prizes are worthy of an honorable and energetic competition, and we hope our readers will not let an opportunity so favorable pass without attention.

☞ For Terms see Prospectus on the last page.

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Agricultural Implements—*Threshing Machines*—Elisha S. Snyder, of Charlestown, Va., exhibits what he calls the farmer's labor-saving machine for threshing, separating, cleaning, and bagging grain, or in other words a very compact thresher and separator with a fanning mill attached, and a spout for the grain to run from into a bag.

B.G. Hathaway, Rock Stream, Yates Co., N.Y., is the exhibition of another very good threshing machine of ordinary construction.

Wm. R. Palmer, of N. C., is the inventor and exhibitor of another constructed on a new plan, the principal merit of which, however, we should judge to consist in its novelty. It is simply a rotary flail. The swingles are set firmly upon a shaft at right angles to each other and the grain is exposed to the action of these which, as will be perceived, are intended like the ordinary flail to beat out the grain.

Another machine, differing considerably from those in common use, is exhibited by Joseph C. Gilbert, 216 Pearl street, New York City. The concave is furnished with ribs instead of teeth, and the cylinder is formed by connecting upon the central shaft a series of flat strips of wrought iron fastened together near the shaft and expanded by bending at their outer ends which are serrated. We are unable to see the advantages of this arrangement. Van Brocklin, Winter & Co., of Brantford, Canada West, exhibit also in the Canadian Department a very good thresher and separator of the ordinary construction.

John Mayher & Co., of 197 Water street, this city, and Emery & Co., of Albany, N. Y., exhibit one of the new over-shot threshers and separators. A smart business has been done within a few years past in their manufacture, and we do not see why more of them are not to be found in the Exhibition. The manufacturers claim for them decided advantages over the old or under-shot cylinders, and we are inclined to think that in some respects they are certainly superior. Threshing machines are necessarily somewhat complex, and much mechanical ingenuity has been expended upon them until they have been brought to a good degree of perfection; some of those in the Exhibition are capable of doing very nearly all that could be expected of them, and the attention of the manufacturers should be devoted mainly to rendering them more simple; as a farmer's machine, whatever the purpose for which it is intended, should be as far as possible removed from all complexity. Their construction is such that the grain and straw are carried by the cylinder from a level feeding table, over and between it and the concave, which is placed above instead of below, as is generally done in others. The cylinders being 26 to 30 inches long, and 14 inches diameter, are much longer but smaller than those generally in use—giving more room for feeding, in proportion to work done, and doing it nearer the center of motion, and working easier, as the smaller the diameter the greater the power. Again, they require but about half the number of spikes in the cylinder, and an increased motion, so that the spikes may pass through with a velocity sufficient to take off all the grain. The concaves have an increased number of spikes, which, for both cylinder and concave, are swedged from the best Swedish Iron. They are set with an inclination which admits the straw and grain to pass freely, and with as little breaking of the straw as is consistent with a perfect separation of the grain. The concave is so confined as to be readily adjusted and present any desired angle of the spikes to the grain, and also to change the capacity of the throat, thereby retaining the straw a longer or shorter space of time in passing, as the condition and kinds of grain may require. They can be run with less power than the undershot threshers.

Fanning Mills and Separators.—There are several fanning mills in the Exhibition, got up on the *curled maple* and *mahogany* principle, but save in this and some minor details, we did not observe anything about them different from those in common use among farmers.

J. N. & D. Elmore, of Elmira, New York, are the exhibitors of Booth's Patent Separator and Winnower, in which the fans are placed at the bottom of the machine, and the current of air is forced upward through the sieves thus more effectually separating the chaff from the grain. It is a very efficient machine, as by slight changes in the force and direction of the blast, and by the action of the seives, wheat can be separated from chess, cockle, garlic, smut, whiteheads, and other impurities, as well as from grass seed, saving that, and separating the different kinds of grain and grass from one another. The fans are about 18 inches long, and are placed in an air-tight trunk at the bottom of the frame, which is about four feet high, two feet wide, and three feet long. They are driven by a cog wheel 2 feet in diameter, which gives them great velocity, sending the air up a tight trunk, through which the grain is falling from the seives, which are not shaken sideways, like the common fan mills, but are jogged in front by a cam on the shaft of the driving wheel. The seives, five in number, for different grain, are made fine at the end where the grain first strikes them, to let through fine seeds, and coarse at the other end, through which the wheat falls on the inclined plane, and through the wind-spout into a receiver at the bottom. The wind spout at the back of the mill can be closed in part or wholly, by which a little blast is allowed, or all turned out through the seives.

An improved grain and grass seed separator is also exhibited by G. B. Salmon, of Illinois. Augustus B. Childs, of Rochester, N. Y., exhibits another of these separators, of very superior construction, it is however larger than the others, and much more expensive. We doubt not, however, of its being an excellent machine.

It would be tedious if we were to attempt to notice the numberless cradles and scythes, and rakes and forks, which are exhibited, and we shall not attempt it. By the way, we will remark that we did not discover a *horse*-rake in the Exhibition.

Plows and Digging Machines.—There is a very extensive show of plows from the establishment of R. L. Allen, of this city, and of Ruggles, Nourse & Mason, of Boston, Mass.; among these we noticed a swivel or hill-side plow of superior construction. A hook, fastened by a staple to the center-piece of the handles, and changing to either side of the beam as may be desired, enters the back part of the mould-board, and holds it fast on either side of the standard as wanted. The mould-board is easily and instantly revolved from one side of the standard and beam to the other, making a right or left hand plow at pleasure, while the team is turning at the ends of the plow-field; —indeed, it naturally changes from one side to the other of itself, if the hook is lifted. With this plow, the plowman may commence on the lower edge of a hill-side, and turn his furrows all down the slope, changing his plow to a right or left hand one at each turning of the team; or he may begin on one side of a level field and lay his furrows all one way, thus avoiding the "dead" furrow in the center, and the ridging on the sides; and at the next rotation of crops on the field, he may begin on the opposite side, and turn them back again, thus keeping the soil equally distributed and the surface level. We also noticed several steel plows, as steel is by some considered a more desirable material than cast-iron, of which to construct the mould-boards, landsides and shares of plows for working the rich, sticky soils of the Western and other States. Being less porous than cast-iron, and by its greater hardness being susceptible of a much higher polish; steel is doubtless the superior metal of the two, for the body parts of plows intended for working the lands mentioned. Then, too, owing to the greater density and fineness of its parts, the hardness of its surface, and the high polish it takes by friction, steel produces a plow requiring less draught in working rich adhesive soils than would be required if the plow were of cast-iron.

There are also several subsoil plows, one of which is of peculiar construction being very different from those used in England. It has a heavy cast-iron body part or standard, which is secured to the beam by bolts front and rear. The lower part of the body terminates fore-and-aft in a two winged share or point, the wings or inclined planes on each side moderately rising from said points, meeting center ways of the body, at a slight altitude above the base of the plow. When the front end or point has become too much worn to be effective, the body part may be loosened from the beam, turned end for end, and attached again, thus reversing the point. The sub-soil plow is intended to follow directly after and in the channel made by the plow turning the surface soil, loosening and pulverizing the lower soil to any desirable depth, without bringing it to the surface. It is especially valuable in lands where the top soil rests upon hard-pan but a few inches below the surface; and in lands of a stiff clay or other tenacious soil. Although at first thought it may seem a paradox, yet in the working of such lands the use of the sub-soil plow is of great advantage, both in dry and wet seasons. If permitted to do so, plants will, in a dry season, extend their roots deeply into the earth; and by use of the sub-soil plow the stiff hard-pan is opened and pulverized, so as to promote the ascent of moisture from below, as well as permit the roots of vegetation to push lower down and away from the influence of the sun: again, lands of a stiff compact soil, are in a wet season, naturally too cold and moist; but by being deeply loosened and opened, the excess of moisture filters below, the surface soil thus relieved is made light and warm, and the crops prosper accordingly.

Franklin Brownell, of Niles, Mich., exhibits Baker's patent Gang Plow and Seeder. Three light plows are set in a frame, which is inclined about 45° to the line of draught, and on which is a hopper similar to that used in drills. The frame is mounted on wheels, and the plows are adjustable for deeper or more shallow tillage.

Ralph C. Pratt, of Canandaigua, N. Y., is the manufacturer and exhibitor of a rotary ditching machine. The earth is taken up by a series of curved shovels fastened in the periphery of a revolving cylinder, which strike in the earth as the wheel or cylinder rolls along, and bring it up to the top when it falls on an inclined plane, and slides off to the side of the ditch.

L. H. Gibbs & Co., of Washington, D. C, are the exhibitors of a rotary spade, which is ingeniously constructed. The spades in this are arranged on an axis between two circular cast-iron plates, and after striking in the earth, are forced apart by the action of levers, which have a broad flat end, and receive successively the whole weight of the machine.

There are many other agricultural implements in the Exhibition of superior construction, most of which are doubtless durable and efficient but we noticed none in which the peculiarity of construction would render them interesting to our readers.

Recent Foreign Inventions.

Perpetual Motion.—Louis M. Lombard, of Paris, patentee.—This inventor is a barrister at law, and his invention consists in the effects obtained from equal weights acting upon one another, being obtained principally by means of one of the weights losing all or part of its force by dividing its action, causing it to balance itself, in consequence of which it can easily be raised by another opposite weight, which possesses all its force. "The excess of the force of one of the weights," says the patent, "above that of the other, is then susceptible of becoming motive power." The inventor describes a a method of applying the system to an alternate and continuous motion by connecting three equal weights in such a manner that two of them together shall cause the third to oscillate continually with double their own velocity, at the same time producing a *surplus* power.—This invention is based upon a fallacy, no man acquainted with the laws of mechanics would have troubled himself to produce such a self-deceptive, but at the same time easily-detected mechanical vagary.

Another of the same.—Lot Faulkner, of Cheadle, Chester, Eng., patentee.—This inventor is a machinist, and he should not have disgraced his profession by such a piece of mechanical nonsense. It consists in obtaining motive power by means of weighted levers mounted upon a beam, and made to revolve in such a manner that they shall cause each end of the said beam to become alternately the heavier, and thus obtain a vibratory and oscillating motion thereto. "All the fools are not dead yet," for here are two patents taken out recently in England, the one by a Frenchman, and the other by an Englishman, for producing perpetual motion by mechanical contrivances, upon the principle that there is inherent power in a lever. How necessary it is for inventors to be acquainted with mechanical philosophy; had these men been readers of the "Scientific American," their time, study, labor, and money would not thus have been thrown away.

Improvements in Steam Engines.—Messrs. J. Scott and W. Jaffrey, both of Greenock, Scotland, have patented some peculiar arrangements in the parts of engines, more especially those employed for screw propulsion. The condenser is made the basis of the frame, and the two cylinders are placed on it; they are inverted, and set at an angle of 45°, their pistons having each two rods, united to a single cross-head, working in guides bolted to the cylinder covers. From each end of this cross head a connecting rod passes to an overhead first-motion shaft, carrying two spur wheels at some distance apart, on the outside of which is a crank pin, to which the two opposite rods on each side of the engine are jointed. The spur-wheels gear into pinions on the shaft of the propeller, which runs along the keel line under the condenser. The air pumps are both on one side the engine, worked from one of the crank pins by a single large eccentric. Each plunger has a radius bar as a guide, which also works the feed and bilge pumps beneath.

Improvements in the Permanent Way of Railways.—John Pym, of London, has invented a peculiar construction of sleepers for the permanent way on railways. These he constructs of earthenware, slate, stone, or other similar and suitable material, and forms them hollow instead of solid, as has hitherto been the case; and in order to prevent sopping, the bottom and sides are perforated, allowing the water to enter and flow off through the internal chamber at either end. When not practicable to fix the chair in the usual way, the patentee forms the sole sufficiently long to overlap the sides, and secures the ends by passing a bolt from side to side of the sleeper, fastening it by a nut, key, or rivet; wood, felt, or other suitable material being placed between the chair and sleeper.

Venetian Red.—Mr. J. Oliver, of Newcastle-on-Tyne, has patented the decomposing of sulphate of iron by magnesia, and applying the hydrated oxyde of iron, so obtained, to the manufacture of Venetian red by mixing with gypsum, drying and calcining the mixture in close retorts.

[Collated from our foreign exchanges, "Mechanic's Magazine," "Newton's London Journal," "Artizan," "L'Invention," Paris, &c.

Cholera Remedy.

Edward W. Lane, "the well known Orientalist," has put forth a specific against cholera.—It consists in a tablespoonful of powdered mustard in a tumbler of cold water," as an emetic, and a wine-glassful of brandy with ten grains of Cayenne pepper as a restorative. Rest, perspiration, and sleep, are thus to be produced.—This remedy is said to have been used in Cairo with success in 1848.

New Rotary Printing Press.

A cotemporary makes enquiry respecting the Rotary Printing Press of J. G. Nicolay, which was described some time ago in many of the papers, and asks if it is in operation in any part of New York. We have not seen it nor heard of its arrival here.

This press was constructed with a horizontal rotary type bed, and the impression was given by conical rollers.

William Sewell, Chief Engineer in the Navy, who was very recently ordered to join the steam frigate "Saranac" for sea, has resigned.

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TO CORRESPONDENTS.

F J. R. G., of Ohio—Your machine for scouring and cleaning daguerreotype plates is different from anything we have ever seen for the purpose ; send us a model.

E. M.. of Pa.—You had better address a line to G. W. Whistler, Jr., Sup. N. Y. and N. H. R.R., New Haven, Ct. We will hand your letter over to the company.

L. M. P., of Mass.—You ask what becomes of the air bubble of a spirit level, as it disappears when exposed to the sun for two hours in warm weather, that " the glass holds the alcohol but cannot keep in the air." The air does not escape through the glass, but mixes mechanically by the pressure of expansion, with the liquid in the level tube; any liquid can be made to absorb a certain quantity of gas by pressure ; this is the true explanation.

J. P. H., of Va.—So far as solar evaporation is concerned. we are not in possession of any experiments, to give you positive information respecting the amount of water which is evaporated on a square foot. The rule for boiling water is one cubic foot per hour for every 9 square feet of heating surface. This would give 9 9-10 cubic feet per hour for 100 square feet of surface, at 150 degs. temperature, and 11 11-100 per hour at 212 degs.—the temperature of boiling water. You can find the intermediate amounts, from 120 upwards, by this data.

F. O. B., of Phila.—You may place your engine ten miles from your steam boiler, if you keep in all the heat, and the steam will be as elastic as at the boiler ; steam does not lose its elasticity but by expansion and condensation.

W. F. O., of Texas—The mode of putting up preserved meats, as described in Vols. 7 and 8, Sci. Am., to which you refer, are sufficient. The principle is, to expel the air and keep it excluded.

F. K., of Conn.—We only noticed those inventions mentioned in the P. O. Report. The peculiar advantages of your propeller can only be presented by an engraving.

J. R., Jr., of Mich.—We now understand your plan, and have no knowledge of the same having ever been known or used before. Every new and useful improvement is patentable.

T. M., of Pa.—Yours will receive attention.

M. B. D., of Phila.—The zinc is mixed with white gum de mar ; mix the oxyde of zinc until it is of the proper consistency with the varnish made of the said gum. We do not know any one engaged in selling patent rights.

J. B. S., of Pa., and R. M., of D. O.—Yours have been received and will meet with attention.

W. C. M., of Mass.—Our opinions coincide with yours respecting tanning ; you perceive, that we have always treated such subjects, with impartiality, and a knowledge of facts.

J. C. G., of Ohio—Your plan of making a paper and tar roof is good ; tack the paper down every few inches with common carpet tacks. The last coat should be a mixture of pitch and tar. Put in plenty of sand and beat it down well, and strew the gravel thick on the top.

M., of Ind.—There is nothing new in your plan of constructing a paddle wheel with the floats inclined forward at an angle of 45 degrees, instead of extending in radial lines from the center to the circumference. Dodge's Patent, as old as 1835, covers the same thing, and has never been used.

J. E. R., of Mass.—We have no doubt your invention is new. Mr. Cradit's patent has none of the features which you propose to claim,—he used a circular saw. We send you by mail a circular of instructions ; it will guide you in getting your case properly before the Office.

M. W., Jr., of California.—The conduction of sound by your wire fence depends on the vibrations of its particles. Wood is the best substance you can use for supports. The distance to which the sound proceeds depends entirely on the force of the vibrations, not on a non-conductor.

R. B., of Va.—Let the past be a lesson to you for the future. A horse power is 33,000 lbs. lifted one foot high in one minute. Multiply the pressure in pounds on the area of piston, by the velocity in one minute, and divide by 33,000.

T. J. M., of N. Y.—Why do you not employ two wire cables and erect a small suspension bridge. You can do it yourself.

W. R., of N. Y.—You can obtain the peroxyde of manganese from Kent, in John street, in this city. We are not acquainted with any more simple method of obtaining the chlorine gas than by the use of salt, manganese and sulphuric acid.

C. J., of N. J.—There is wisdom in your suggestions, and you should live up to them. No water wheel can give out more power than that of the water which drives it ; if it were otherwise, perpetual motion would be a problem no longer. It is a good wheel which works to 75 per cent. of the force of the water.

J. K., of N. S.—You should have a fish-drying room, in which stoves should be placed, so that the drying can be carried on in wet weather.

J. McD., of Conn.—Your plan of a propeller is not new, and of course not patentable. We published an engraving of the same device in volume 5, Scientific American.

E E., of Tenn.—Your proposed improvement in hair brushes is not new—nearly twenty years ago Joseph Burgess, of this city, obtained a patent for the combination of the comb and hair brush, or rather the introduction of the teeth of the comb into the hair brush.

R. C., of N. Y.—Ginger possesses tanning properties, but its use for the purpose would be too expensive. Belote's patent, now expired, claimed it in combination with salt and alum.

J. E. R., of Ct.—We cannot recommend any better remedy for dyspepsia than out-door exercise. No machine for this express porpose is in use, but we think chopping wood, or a free use of the spade and hoe might not be bad practice.

M. L. W., of Texas—We cannot furnish such information about the " waves " as you require. We apprehend that you will find it a difficult question to answer.

J. J., of Ill.—The power of a water wheel can never be greater than that of the water which drives it. The talk of leverage is nonsense, no power is obtained from a lever, it is a mere instrument for directing power.

J. Y. P., of Va.—We do not think you could obtain Vols. 1, 2, 3, and 4, if you should advertise for them ; we do not know of a single set for sale.

V. L. C., Jr., of Tenn.—You will have all the information about gildlng in the series of articles we are now publishing on the subject. Tripoli is the best substance after using the emery, to polish steel and silver.

H. L. H., of Ohio—We do not discover the slightest novelty in your alleged improvement in suspension bridges and cannot advise you to make an application.

H. S., of Ky.—We will illustrate your railroad anchor as soon as we possibly can. $8 received.

W. K. & M., of Ill.—Your new model has come to hand—all right.

W. G. Jr.; of N. Y.—You misunderstood the official letter we sent you : the Office do not demur at your receiving an assignment of all Mr. H.'s interest ; but what the Office means is, that the patent cannot issue to you as the " assignee," not doubting your right to the " whole" interest in the patent, however, after it is granted.

W. W., of N. Y.—The application of hollow shelves to admit heat for the purpose of raising cream on milk, is not patentable—the principle is not new.

D. B. H., of S. C.—There are conditions involved in the construction and operation of " Beach's Mammoth Press " which render it impossible for us to advise with inventors in regard to the success of their plans. An invention which will feed papers to presses of all kinds with unerring certainty, would be very valuable. Those who really wish to compete for the prize must make themselves personally familiar with the nature, construction, and operation of the press, otherwise it will be utterly useless for competitors to offer plans.

A. W., of N. Y.—We were early taught that the chief end of man is to " Glorify God and enjoy him forever." This we give as an answer to your question.

J. A., of N. Y.—There is no good work sold here upon the " British Patent Law ;" the Colonies will enact their own laws, some of them have done so already. Could not send all the back numbers of this volume to Mr. C.

G. C., Jr., of Mass.—The Machinist's Drawing Book, published by Blackie & Son, 117 Fulton st., N. Y., will answer your purpose.

J. S. P., of N. Y.—Your plan of over-shot water-wheels is very old, and has passed to condemnation. Mushet's Papers on iron will afford such information as you want published in London.

J. S., of Va., and L. P., of Geo.—The plans you propose for ventilating cars by means of flexible tubes extending from the front of the locomotive over the entire train is not new. We cannot undertake to say how many times the same thing has been proposed.

G. S., of Geo.—Force and lifting pumps are made and sold by G. B. Farnham & Co., of this city, his prices we do not know.

P. J., of Ohio—It is impossible for you to obtain a patent : Platt's patent, 1841, covers, all the points claimed by you ; Ashcroft's Gauge is a good one, you can procure it of J. P. Merriam, Sandusky City, Ohio; if you prefer the other you have the maker's address.

J. S., of N. C.—No later work than Evans', upon mill building, has been issued. There is great demand for some good reliable work upon this subject, but it would be expensive to publish it as it should be done.

J. A., of Ct.—We are very much inclined to think your device for feeding papers to a printing press cannot be made to operate on the " Mammoth Press."

J. P., of Tenn.—The application of concaved mirrors to such purposes as you name could not be considered a patentable invention.

H. B., of Wis.—By consulting Vol. 8, Sci. Am., you will get all the information we possess on the subject of Artesian Wells. A chain pump will answer your purpose as well as any other ; galvanized iron is used for the chains. For information about Hydraulic Rams address W. & B. Douglass, Middletown, Ct.

Money received on account of Patent Office business for the week ending Saturday, Nov. 12 :—

E. G. D., of Ct. ; $55 ; D. M. R., of N. H., $30 : D. L. L., of Mo., $375 ; F. M. K., of Tenn., $60 ; W. N. R., of Wis., $30 ; P. K., of N. J., $25 ; D. B. K., of Ohio, $20 ; J. D., of Pa., $35 ; C. H., of Ct. $80.

Specifications and drawings belonging to parties with the following initials have been forwarded to the Patent Office during the week ending Saturday, Nov. 12 :—

J. L., of N. Y. ; J. M., of Ct. ; G. W. B., of N. Y. : M, T., of Va. ; P. K., of N. J. ; D. B. K., of O, ; J. P., of Ky.

A Chapter of Suggestions, &c

ALL GONE, ALL GONE.—At the commencement of the present volume, we printed 5,000 extra copies, which we concluded would be sufficient for the subsequent demand. It is now but eight weeks since Volume Nine was commenced, and to the disappointment of many we are obliged to announce that the entire editions of two numbers, 1 and 2, are all gone, and that we shall not be able to furnish the back numbers to any parties who order after this date.

MISSING NUMBERS—Mail Subscribers who have failed to receive some of the numbers of Vol. 8, are informed that we are able to supply them with any of the numbers, from 1 to 52, EXCEPT the following, and these we are ENTIRELY out of—Nos. 2, 3, 4, 10, 12, 14, 15, 16, 17, 18, 19, 20, 21, 22, 25, 26, 47, 48, 49, 50, 52.

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BACK NUMBERS AND VOLUMES—In reply to many interrogatories as to what back numbers and volumes of the Scientific American can be furnished, we make the following statement : Of Vols. 1, 2, 3, and 4—none. Of Vol. 5, all but six numbers, price, in sheets, $1 ; bound, $1,75. Of Vol. 6, all ; price in sheets, $2 ; bound, $2,75. Of Vol. 7, all ; price, in sheets, $2 ; bound, $2,75. Of Vol. 8, all ; price, in sheets, $2 ; bound, $2,75.

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PATENT CLAIMS—Persons desiring the claim of any invention which has been patented within fourteen years, can obtain a copy by addressing a letter to this office, stating the name of the patentee, and enclosing $1 for fees for copying.

PATENTEES—Remember we are always willing to execute and publish engravings of your inventions, providing they are on interesting subjects, and have never appeared in any other publication. No engravings are inserted in our columns that have appeared in any other journal in this country, and we must be permitted to have the engravings executed to suit our own columns in size and style. Barely the expense of the engraving is charged by us, and the wood-cuts may be claimed by the inventor, and subsequently used to advantage in other journals.

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IMPORTANT TO INVENTORS.—The undersigned having for several years been extensively engaged in procuring Letters Patent for new mechanical and chemical inventions, offer their services to inventors upon the most reasonable terms. All business entrusted to their charge is strictly confidential. Private consultations are held with inventors at their office from 9 A. M., until 4 P. M. Inventors, however, need not incur the expense of attending in person, as the preliminaries can all be arranged by letter. Models can be sent with safety by express, or any other convenient medium. They should not be over 1 foot square in size, if possible.

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PETER STUBS,
Barrister, Attorney at Law and Notary Public.
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THE NEW HAVEN MANUFACTURING CO.—New Haven, Conn., having purchased the entire right of E. Harrison's Flour and Grain Mill, for the United States and Territories, for the term of five years, are now prepared to furnish said mills at short notice. These mills are unequalled by any other mill in use, and will grind from 20 to 30 bushels per hour of fine meal, and will run 24 hours per day, without heating, as the mills are self-cooling. They weigh from 1400 to 1500 lbs., of the best French burr stone, 30 inches in diameter ; snugly packed in a cast-iron frame, price of mill $200, packing $5. Terms cash. Further particulars can be had by addressing as above, post paid, or to S. C. HILLS, agent N. H. M. Co., 12 Platt st., N. Y. 5 tf

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Scientific Museum.

Gilding---No. 1.

Within the past three months a number of our readers have made enquiries of us respecting the processes of gilding, especially *fire gilding*. We are not acquainted with a single establishment in this city, nor in our country, where such an art is practised, and the task of obtaining such information is exceedingly difficult, because those who practice it are not willing to impart those little, but important secrets belonging to the craft, on which practical success depends. Although electro-plating and gilding have become conspicuous arts within the past few years, they have by no means superseded old fire gilding; indeed, we have been creditably informed that the latter art is more practised now than ever, because such gilding is more durable than the former. We have, however, obtained, a great deal of useful information on the subject, much of which is new and interesting. We will therefore present the same in a series of articles.

1st. To fire-gild copper an amalgam of gold and mercury is prepared. This is made by taking one ounce of pure gold, placing it in a crucible and heating it up in a fire until it becomes a faint red. Into this there is then poured eight ounces of mercury, and the whole stirred up with an iron rod until the gold is dissolved. When this is accomplished it is poured into an earthen dish containing water, where it is washed. This amalgam is then squeezed in a chamois leather bag, by which it gives up some mercury, but retains about 33 parts mercury to 57 of gold, in 100 parts. The mercury which passes through the leather retains some gold in solution, which is employed in making up a fresh quantity. A solution of nitric acid and mercury is then prepared for applying gold amalgam. This is made by taking 100 parts by weight of mercury and 110 of pure nitric acid, placing them in a glass mattrass, and submitting them to a gentle heat. Fumes of nitrous gas pass away and the mercury is dissolved. This solution is diluted with 25 times its weight of pure water, and bottled up for use.

The copper article to be gilded is annealed to prepare it for the gilding. This is done by thrusting it into a clear red charcoal fire, then covering it up to prevent oxydization. Great care must be exercised in operating articles of unequal thickness. This work is generally done in a dark room. When the article in the fire has become a cherry red color, it is removed with a pair of tongs, and set to cool slowly in the air. After this it is placed in an earthenware vessel containing extremely weak sulphuric acid, and is left in it till the oxyde which may be on its surface is dissolved or perfectly loosened, when it is rubbed with a hard brush. When its surface becomes perfectly bright it is washed in pure water and dried. If its surface be still variegated, it is further dipped into a solution of weak sulphuric acid, in which is dissolved some common salt, from which it is afterwards taken out, quickly washed in pure water, and rubbed well with fine dry saw dust or bran; the surface should never be made perfectly smooth, as the gold will not adhere to it so well.

The gold amalgam already described is put on with a gilders' scratch brush or pencil, which is made of fine brass wire. This is dipped into a solution of the nitrate of mercury, then drawn over a lump of the gold amalgam (which is laid on the sloping side of an earthen vessel) and applied to the surface of the cleaned article which is to be gilded. This process is repeated—dipping the brush in the solution, then drawing it over the amalgam, and laying it on the surface to be gilded—until it is covered with a just proportion of gold. It is then washed in water and put into a fire to volatilize the mercury. If one coat of gilding is not sufficient, it receives a second in the same manner.

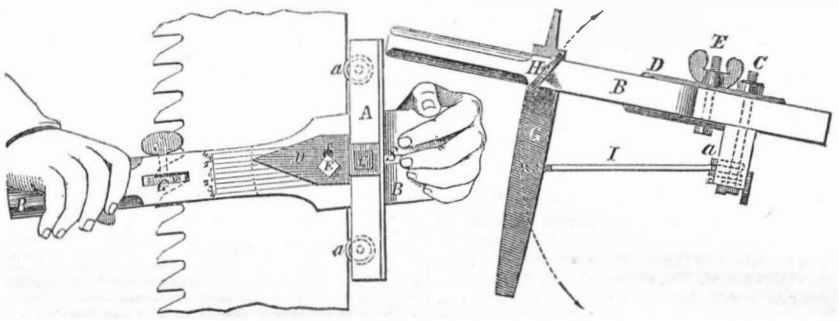
The volatilization of the mercury is a work of great delicacy; to perform it well requires skill and practice. The fire used for the purpose is made clear and bright. The workman holds the articles under operation with a pair of long tongs, and keeps a thick glove on his left hand. He turns it about carefully, and does not allow the volatilization to proceed too rapidly. He withdraws it from time to time from the fire and brushes it with a soft long-haired brush, in order to equalize the amalgam. He knows when the mercury is entirely volatilized by a peculiar hissing sound which is emitted when a drop of water is suffered to fall on the article. As stated before, if the article is not thoroughly coated with the amalgam, the operation must be repeated. When fully coated with gold it is washed in water slightly acidulated with vinegar, in which it is well scrubbed with a brush.

The article is burnished with a bloodstone burnisher. The polisher dips the burnisher in water sharpened with vinegar, and rubs it backwards and forwards in the same direction on the surface, until it exhibits a fine polish and a complete metallic luster. It is then washed in pure cold water, dried with a soft linen cloth, and the operation is concluded by slowly heating it for a few minutes, on a grating placed above a chaffing dish of burning charcoal. The *deadened* surface is produced by covering the burnished parts with a paste composed of Spanish white, gum water, and honey or sugar, then drying it, and afterwards submitting it to a strong heat in the fire, until the paste becomes carbonized. It then assumes a fine gold tint, after which it is taken out, covered with a salt coat composed of nitre, salt, and alum, dissolved together, and is again returned to the fire, and heated until this salt crust becomes nearly transparent and fuses. It is then taken out, quickly dipped into weak nitric acid, then well washed with pure water, milk warm, dried with a clean soft cloth, and finished by completely drying it on the top of a stove.—The Spanish white paste protects the burnished parts from being affected by after heating in the fire.

(To be Continued.)

SAW TOOTH CORRECTOR.

Figure 1. Figure 2.



The engraving presented on this page is an illustration of a Saw Tooth Corrector for finishing the filing of saws after they have been partially filed by hand. The invention consists in making the lever which carries the file, adjustable in an angular direction, to give any required direction or slope to the tooth, and in providing the lever carrying the file with a scale for regulating said inclination. Fig. 1 is a side view, and figure 2 a vertical view of the instrument in use, the same letters in each refer to like parts; they represent the rest provided with two friction rollers, *a a*, which bear loosely on the back of the saw. This rest is secured to the lever, B, as it is moved toward or from the file to accommodate different widths of saws; D is a pointer attached to the rest and secured to the lever by the set screw, E, which works in the slot, *b*, to allow the lever to be set at any required angle to give the proper inclination to the tooth It moves over the scale on the side of the lever; G is the file secured in ths lever by the set-screw, H, and from the arrangement described it can move freely back and forth in the arc of a circle; J is the saw with the implement placed against its back resting on the friction rollers, *a a*.—The back of the saw thus serves as the axis or center of motion for the file, and the instrument can be moved up or down as required. The use of this implement must necessarily cause a correct finish to be given to the tooth, the advantages of which any sawyer well knows.

For further information address the inventor, Samuel E. Parsons, Wilkesbarre, Luzerne Co., Pa.

Water Spouts on the Lake.

The "Wayne Democrat" says, several of these phenomena have recently been seen upon Lake Ontario, two of which were visible at Sodus Point. They were dense, conical shaped columns, and formed a continuous line from the earth to the clouds. One of them, the largest which was nearly thirty feet in diameter, was precipitated against the bluffs, and broke with deafening noise upon the rocks below, causing so great a commotion of the waters, that large quantities of logs and lumber were torn from their moorings and washed far out into the lake.—The smaller of the two pursued its terrific and onward course as far as the eye could reach, filling the beholders with wonder and astonishment, and awakening such a feeling of grandeur and sublimity that they stood almost mute and statue-like, until the sound of the gigantic column of water died far away in the distance. A portion of the pier of the lighthouse was swept away by the elements and considerable damage done to the light house. There was a severe storm out upon the lake, and several schooners, brigs, and other lake crafts, came scudding in under bare poles, seeking security from the tempestuous billows without, upon the now placid bosom of the harbor.

American and European Naval Architecture.

It is rumored that Mr. Webb, the eminent ship-builder in New York, has been authorized by the Czar of Russia to build a 100 gun ship, furnished with a steam propeller as auxiliary power, and to deliver her within reasonable time at St. Petersburg. Mr. Webb, a year or two ago, conceived the idea of building such a ship, and his plan was submitted to about a dozen admirals and high officers of Russia, by his agent, and rejected, at the instance of the Emperor. A personal interview, however, was lately granted Mr. Webb, and the result is, he has been commissioned to build the ship. The correspondent adds that the Grand Duke of Russia declared that the government has followed English models long enough. It is also said that the knowledge of Mr. Webb's contract has been a matter of great chagrin to various English parties who have been long negotiating at St. Petersburg for this object.

Lucifer Matches.

As we have frequent enquiries respecting the making of friction matches, and generally refer enquirers to former volumes of the "Scientific American" for information, the following receipts to many of our new subscribers—of which we now have a great number—may be valuable:—

Take 16 parts (by weight) of gum arabic, 14 of saltpetre, 16 of vermilion, and 9 of phosphorus, and mix them well together, in an earthen vessel. Into this dip the ends of the matches, and then dry them in a clean and moderately warm place. Gum tragacanth can be substituted for the gum arabic. To prevent the injurious influence of the oxygen of the atmosphere, the matches after being dipped and dried should have their ends coated with dilute copal varnish, or a solution of gum containing saltpetre.

The end of the matches must first be dipped into molten sulphur, and dried, before they are dipped in the phosphoric mixture. The vermilion is used for the purpose of coloring only, and smalts may be used as a substitute.—Matches made in this manner, do not ignite with a crackling report; those which ignite with a series of small explosions are made with some chlorate of potassa in the mixture. This substance is dangerous to use, but may be employed with care.

To Prevent Steam from Condensing in Pipes.

J. B. Smith, of Milwaukie, Wis., has sent us the following plan which he has adopted to prevent the steam from condensing in the steam pipe of his engine:—

"The outside of the pipe is covered with plaster of Paris of about three-fourths of an inch in thickness, and this is wrapped round with canvas."

He has found this plan to answer admirably; the heat on the outside is never too hot for the hand; thus showing that it is retained inside. As plaster of Paris is such an excellent non-conductor, he believes—and so do we—that it may be used with advantage for covering steam cylinders, the tops of boilers, as well as steam pipes, and it would save considerable fuel in many engines, as much heat is lost by surface radiation, and consequent interior condensation.

The North-West Passage.

The British Admiralty has published a map of the course of Capt. McClure in making the passage. He is not yet out of the ice, but has passed through seas never penetrated before.—His course was not north-west, but north-east from Behring's Straits. The hero who has accomplished this feat is Capt. Robert McClure, formerly First Lieutenant of Sir James Ross' ship, the Enterprize, consequently he is a veteran in such expeditions. Like Nelson, in winning a battle by disobeying the orders of a commanding officer, he has accomplished this wonderful feat by disobeying the orders of his superior officer, who, strange to tell, was the first person he met on the other side.

Sandwich Islands.

The King of the Sandwich Islands wishes to place his kingdom under the sway of our republic, and the French and British Consuls have protested against such policy. He must be a sensible fellow, that King. "Westward the star of empire takes its way."

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